THE MARINE REVIEW

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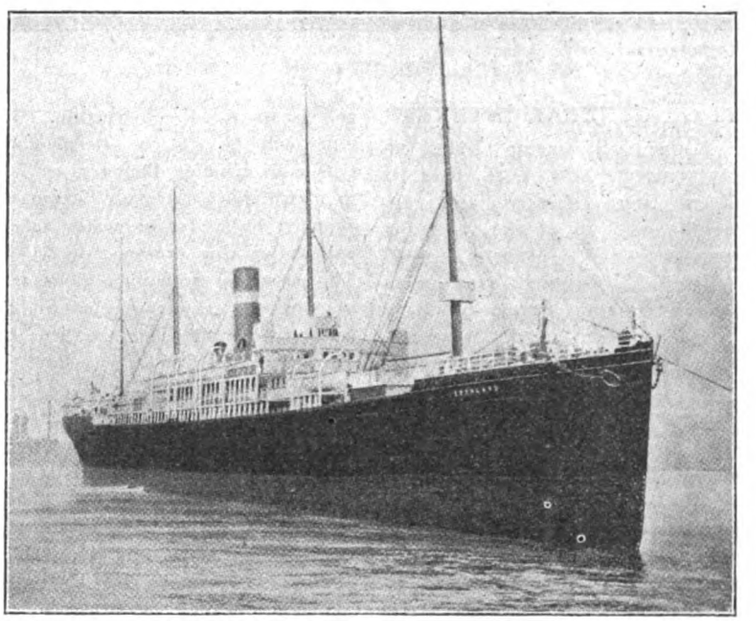
FOR THIRD CLASS PASSENGERS ONLY.

The Red Star Line steamer Gothland, which recently made her maiden trip in the New York-Antwerp service, is unique in that she is equipped for third-class passengers exclusively and has unusually elaborate accommodations throughout. Formerly one of the crack vessels in the Australian and New Zealand service of the White Star Line, as the Gothic, she last year underwent extensive overhauling and alterations at the yards of her builders, Harland & Wolff, Belfast, for the trans-Atlantic third-class trade.

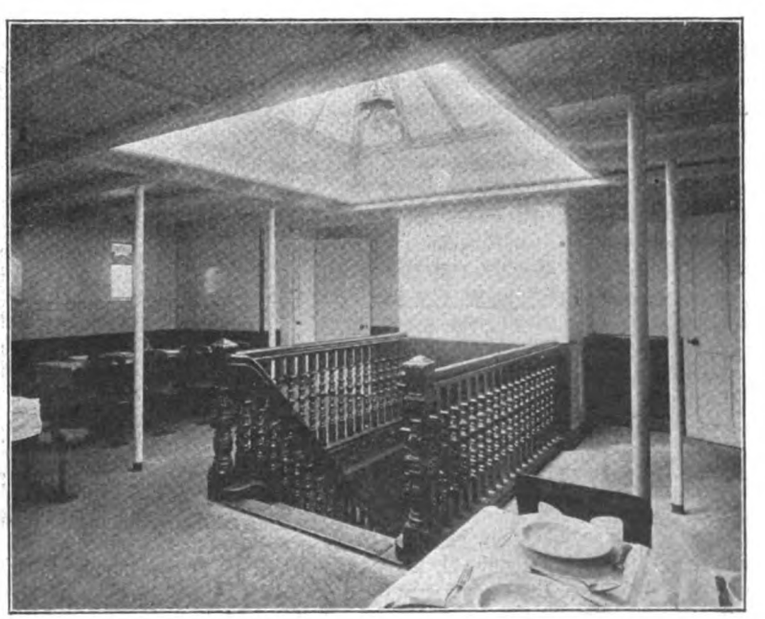
The general dimensions of the Gothland are: Length over all, 504 ft., beam, 53 ft. 3 in., depth, 37 ft. with a gross tonnage of 7,660. Her propelling machinery consists of two sets of triple-expansion engines capable of maintaining an average speed of 14.5 knots per hour, steam being supplied by six single-ended boilers carrying 175 lbs. per sq. in.

As shown in the accompaning photographs, the accommodations are superior to those ordinarily assigned to this class of passenger. A large number of two-berth rooms are set aside for the use of married couples, familes also being assigned to separate small rooms. The old type of open-berth sections is entirely dispensed with. Two large dining rooms of ample seating capacity are situated on the upper and lower decks, smoking, reading and lounging rooms also being provided.

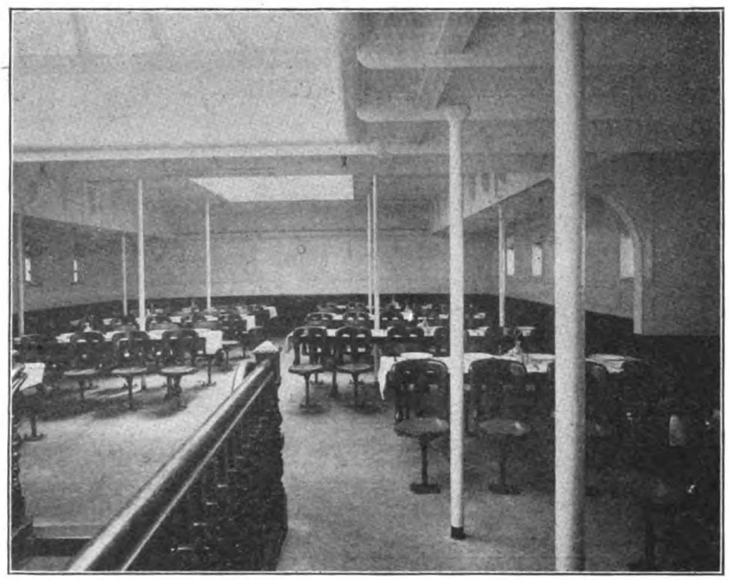
The Gothland has a wide expanse of promenade and main deck, both of which are entirely at the service of the third-class passengers, of which the vessel has accommodations for over 1,700. She is lighted throughout by electricity, and in addition to the usual auxiliaries has an evaporating system of large capacity. Her fresh water tanks have a capacity of 57,000 gallons. The Gothland has nine bulkheads and a double-bottom ballast tank system.



RED STAR LINE STEAMER GOTHLAND.



STAIRWAY CONNECTING THIRD CLASS DINING SALOONS.



ONE OF THE THIRD CLASS DINING SALOONS.

ITEMS OF GENERAL INTEREST.

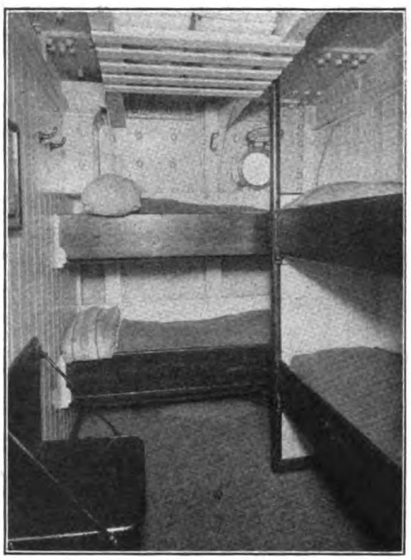
The Munson Steamship Line, 82-92 Beaver street, New York, held its annual meeting recently and announces the election of the following officers: Carlos W. Munson, president; Alfred H. Bromell, vice president and secretary; Frank C. Munson, vice president and treasurer; Charles M. Dimm, assistant treasurer, and John W. Reynolds, assistant secretary.

C. H. Leach, Boston, Mass., was the lowest bidder for the construction of the dry dock at Pearl Harbor naval station, Hawaii, proposals for which were opened at the Navy Department, at Washington, Feb. 13. Eight firms submitted bids under varying specifications. The lowest bid for the dock and accessories complete was $1,886,883. The dock will be the largest in the world, as it is to be 795 ft. in length.

The Navy Department is preparing to make tests of the furniture used on warships with a view to selecting those types which offer the greatest resistance to fire. The tests will be made at the New York navy yard. There are objections to the use of metal furniture but it is reported that asbestos furniture now in use on board an American cruiser has given perfect satisfaction. The results of this test will determine to a large extent the types of furniture to be installed on future warships.

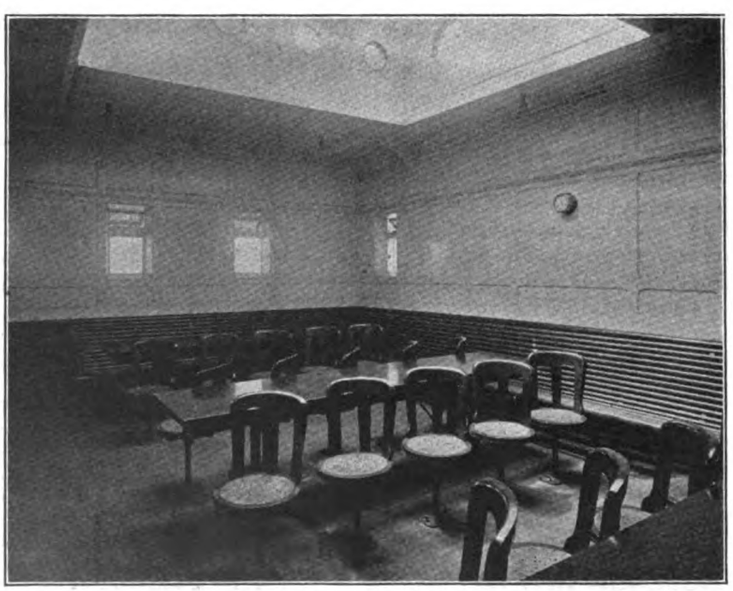
Foss & Strome, builders of small craft at Tacoma, Wash., are busy on the construction of a 70 ft. steamer for Weeks & Davis, also of Tacoma. She will have a beam of 14 ft. and a depth of 5 ft. and is of wood construction. The engine will be of the steeple-compound type with cylinder diameters of 7 and 14 in., with 12-in. stroke. Steam will be supplied by a Taylor water tube boiler with a working pressure of 250 pounds. The passenger accommodations are to be of the best. It is expected to have the boat ready for her service between Tacoma and Wollochet Bay in the spring.

The former lake steamer A. G. Lindsay, which was taken to the Pacific coast some time ago, is to have a new run of boilers fitted to her. The Lindsay was bought by a syndicate of Aberdeen, Wash., men and the expense of taking her around the Horn was so great that she was placed in the hands of a receiver on arrival at her destination. After the sale by the receiver about $10,000 was expended in repairs and the Lindsay was put in the Seattle-Alaska run. The new boilers are to be built at Seattle and will be placed aboard the boat at Aberdeen.



THIRD CLASS FOUR-BERTH ROOM.

Walfrid Sylven, who is consulting naval architect to the Swedish navy, at Stockholm, and who was formerly connected with the United States Lighthouse Establishment, has prepared designs for a new type of steamer for ocean-river service by means of which freight may be transported from Mississippi river ports to Mexico and Central America



ONE OF THE THIRD CLASS DINING SALOONS.

without breaking bulk. The general dimensions of the vessel will be, length, 200 ft.; beam, 45 ft.; depth 27 ft. John F. Cahill, of St. Louis, will undertake to organize a company to build such a vessel.

Provision has recently been made by the French senate for the construction of a dry dock and basin at Havre capable of accommodating the largest liners. The cost of this work will approximate $20,000,000.

Representative Calder, of New York, has introduced a bill in the house which provides for the co-operation of the life-saving service of the United States with such companies as possess vessels equipped with life-saving appliances and wireless telegraph apparatus. The bill empowers the life-saving service to co-operate with these companies and to notify them of all wrecks which may occur on the Atlantic coast, but specifies that the United States government shall not be liable for any recompense which these companies may give in saving human life or insuring the safety of vessels.

The United States senate is soon to take up the bill of Senator Hopkins, of Illinois, which authorizes the issuance of $500,000,000 worth of Panama canal bonds for the completion of the Panama canal. The subject of bonds, whether for the canal or for other purposes, has always been dealt with by the committee on finance, and it appears probable that the canal committee will do little more than recommend the reference of the measure to the finance committee. Senator Kittredge is inclined to favor issuance of bonds by the secretary of the treasury after appropriations have been made by congress, rather than to provide now for the issuance of so large an amount of bonds.

Winter passengers on the new giant liners crossing the Atlantic are coming to know that if they wish to avoid sea-sickness it is best to choose cabin space on the lowest possible deck, instead of on the promenade deck, usually considered the most desirable. An added interest attaches to the fact that the lower deck cabins are considerably less expensive. The explanation hinges on the principle that it is the tip of the pendulum that gets the most swing and as the big liners' upper decks are from 50 to 100 feet out of water they are bound to make the wider arc. The old objection to lower deck rooms on the score of ventilation is of no consequence on the modern ships and in bad weather the lower deck is quite likely to have even better ventilation than the upper ones, owing to the necessity for closed port holes and doors, both of which are depended upon for ventilation on those decks.

The Bermuda-Atlantic Steamship Co. inaugurated its new service to Bermuda last week with the sailing of the steamer Prince George with a full passenger list. This new service means much to Bermuda and is the culmination of four years of effort on the part of Philip Manson, general manager of the company. The Bermuda-Atlantic Steamship Co. proposes to increase the service later with sailings from Boston, Philadelphia and Baltimore as well as to give to New York what will practically amount to a daily service. The people interested in the new steamship company control the leading hotel property in Bermuda and additions have been made to these hotels to care for the increased business expected this winter.

The house committee on foreign affairs has reported favorably on a resolution introduced by Representative Moore, of Pennsylvania, by which the secretary of state is authorized to invite the permanent International Association of Navigation Congresses, of which the United States is a member, to hold the congress in this country in 1911. No appropriation is asked for as the expense entailed by the entertainment of the delegates is borne by the city in which the congress is held. The resolution names Philadelphia as the proposed meeting place. The purpose of the navigation congress is to bring representatives of the various powers together to discuss questions connected with international navigation as related to commercial and industrial enterprises. These congresses are always attended by the foremost waterway and engineering experts of Europe.

A bill has been introduced in the New York senate by Senator S. B. Cronin, of Brooklyn, which is entitled a bill "to promote and improve the terminal facilities of the harbors of New York, Buffalo, Oswego and Whitehall." The bill provides that within ten days after the passage of the act the speaker of the assembly and the lieutenant governor shall appoint a committee of five members, consisting of three members of the assembly and two senators, who with the state engineer and the surveyor and the chairman of the advisory board of consulting engineers, shall be authorized to select sites for terminals in the above-named cities. The sum of $10,000 is appropriated for the purpose of carrying out the provisions of the act. The members of the committee are not to be paid for their services but will be reimbursed for actual expenditures.

Rear Admiral Charles S. Sperry has upon his formal request been relieved from duty as commander-in-chief of the Atlantic battleship fleet. He is succeeded by Rear Admiral Seaton Schroeder. Rear Admiral Sperry was offered the presidency of the Naval War College, but declined, preferring to serve in a subordinate capacity there.

Major Knight, corps of engineers, United States army, has sent his report to the board of review of the army and it will soon be submitted to congress. He recommends the improvement of the Jamaica Bay waterway, New York, by the expenditure of $3,000,000 for dredging channels, part of which sum is to be paid by local authorities. The report also embodies an item calling for a survey for a deep water channel in Sheepshead Bay, Long Island.

The directors of the Quebec Steamship Co. have begun a rate war with the Bermuda-Atlantic Steamship Co., which is the first company to enter into competition with the Quebec Co. during its quarter of a century service from New York to Bermuda. The new Bermuda-Atlantic Steamship Co. made a rate of $40 for the round trip on its fast steamer St. George and now the Quebec Steamship Co. has reduced its rate from $45 to $30 for the round trip on the twin-screw steamships Bermudian and Trinidad.

A brief has been filed with the interstate commerce commission by shippers of cement to the port of Philadelphia, in which is embodied a complete expose of the discrimination enforced against that port by the railroads. The cement rate from the Lehigh district is made the focus of the complaint since the rate from Northampton, Pa., to Jersey City, a distance of 95 miles, is 80 cents a ton of 2,000 pounds, whereas to Phildelphia, a distance of 74 miles, it is $1.35 Thus for a distance of 32 per cent less the rate is 70 per cent higher. The Pennsylvania railroad has recently made a reduction in its rate for cement for export and coastwise shipment, but this was not sufficient for the complainants, who are contending that the development of this traffic at Philadelphia demands a flat rate such as that quoted to Jersey City.

Carrying Capacities of Steel Bulk Freighters of the Great Lakes, Both American and Canadian.

NAME OF STEAMER.	CARRYING CAPACITY, TONS.
Abraham Stearn	10,000
A. B. Wolvin	2,981
Acadian	3,000
Adam E. Cornelius	7,500
A. D. Davidson	3,000
Admiral	6,800
Adriatic	7,000
A. E. Nettleton	10,000
A. E. Stewart	6,000
Agawa	6,500
A. G. Brower	5,000
Albert M. Marshall	3,000
Alex. McDougall	6,713
Alexis W. Thompson	9,000
Alva	4,000
Amasa Stone	9,600
Amazon	6,500
America	3,500
Andaste	3,028
Andrew Carnegie	5,670
Angeline	6,644
Anna C. Minch	6,400
Arthur H. Hawgood	10,000
Arthur Orr	4,000
Augustus B. Wolvin	10,000
Aurania	5,000
Australia	6,000
Ball Brothers	8,200
B. F. Berry	10,000
B. F. Jones	10,000
B. Lyman Smith	6,400
Bransford	6,250
Brazil	3,200
Briton	3,149
Cadillac	2,354
Calumet	7,000
Cambria	2,941
Capt. Thomas Wilson	6,233
Castalia	4,418
Caldera	9,000
Centurion	4,933
Charles Beatty	2,000
Charles Hubbard	7,500
Charles M. Warner	5,600
Charles O. Jenkins	9,000
Charles R. Van Hise	7,082
Charles S. Hebard	9,000
Charles S. Neff	1,550
Charles Weston	10,000
Chili	4,000
Choctaw	3,042
Christopher	5,900
City of Bangor	6,400
Clarence A. Black	6,622
Collingwood	6,500
Colonel	5,755
Coralia	5,764
Cornell	7,127
Corona	3,105
Corsica	3,049
Crescent City	6,086
Crete	7,000
C. W. Kotcher	7,000
C. W. Watson	6,100
Daniel J. Morrell	12,000
David Marshall	6,600
David Z. Norton	8,228
D. B. Meacham	10,000
D. G. Kerr	7,800
D. M. Clemson	7,800
D. O. Mills	10,000
Douglass Houghton	6,720
D. R. Hanna	10,000
E. A. S. Clark	6,600
E. B. Osler	9,000
E. C. Pope	4,100
E. D. Carter	9,200
Edward Y. Townsend	12,000
Edwin F. Holmes	7,300
Edwin N. Ohl	8,000
E. J. Earling	10,000
Elba	7,000
Elbert H. Gary	10,300
E. L. Wallace	7,000
Empire City	6,086
E. N. Saunders	6,000
Eugene Zimmerman	8,750
E. W. Oglebay	4,900
F. B. Squire	6,550
F. B. Wells	6,800
F. M. Osborne	6,000
Francis L. Robbins	6,300
Francis Widlar	7,000
Frank C. Ball	9,681
Frank H. Goodyear	6,700
Frank H. Peavey	6,800
Frank J. Hecker	7,600
Frank Rockefeller	4,990
Fred G. Hartweil	9,000
Frontenac	3,282
F. T. Heffelfinger	6,800
F. W. Gilchrist	6,800
F. W. Hart	6,000
G. A. Flagg	4,250
Gen. Orlando M. Poe	7,294
General Garretson	10,000
George B. Leonard	6,500
George C. Howe	3,000
George F. Baker	11,200
George H. Russel	8,000
George J. Gould	3,500
George L. Craig	5,600
George N. Orr	4,500
George Stephenson	5,909
George W. Peavey	6,800
George W. Perkins	10,300
German	3,183
Gilchrist	5,700
G. J. Grammer	6,412
Griffin	2,648
G. Watson French	5,800
Haddington	2,500
Harold B. Nye	5,776
Harry A. Berwind	10,500
Harry Coulby	10,000
Harvard	7,084
Harvey D. Goulder	10,000
Harvey H. Brown	4,500
H. B. Hawgood	7,000
Hemlock	7,000
Hendrick S. Holden	6,600
Henry A. Hawgood	10,000
Henry B. Smith	10,000
Henry C. Frick	10,300
Henry Cort	3,418
Henry H. Rogers	11,200
Henry Phipps	11,200
Henry Steinbrenner	6,800
Henry W. Oliver	6,750
H. G. Dalton	3,000
H. M. Hanna Jr.	9,000
Honduras	3,000
Hoover & Mason	8,957
Horace S. Wilkens	5,600
Howard L. Shaw	6,917
H. P. Bope	10,000
H. P. McIntosh	10,000
H. S. Sill	10,000
Hugh Kennedy	10,000
Hurlbut W. Smith	7,000
Iroquois	3,400
Isaac L. Ellwood	7,741
Ishpeming	10,000
I. W. Nicholas	3,859
Jacob T. Kopp	8,000
James B. Colgate	3,329
James B. Eads	4,930
James B. Neilson	3,503
James B. Wood	9,500
James Corrigan	10,000
James C. Wallace	10,000
James E. Davidson	8,966
James Gayley	6,700
James H. Hoyt	5,700
James H. Reed	7,800
James J. Hill	7,802
James Laughlin	10,000
James P. Walsh	8,547
James Watt	6,067
Jay C. Morse	10,000
J. C. Gilchrist	6,800
J. E. Upson	9,000
Jesse Spalding	1,950
J. F. Durston	7,500
J. H. Bartow	9,200
J. H. Sheadle	10,000
J. H. Wade	2,864
J. J. H. Brown	8,000
J. J. Sullivan	10,000
J. L. Weeks	6,700
J. M. Jenks	6,250
Joe S. Morrow	6,500
John A. Donaldson	7,000
John A. McGean	7,500
John B. Cowle	7,000
John B. Ketchum 2d	1,500
John B. Trevor	3,204
John Crerar	3,000
John Dunn Jr.	9,000
John Ericsson	5,649
John J. Albright	6,700
John J. Boland	8,000
John J. McWilliams	4,900
John Lambert	3,000
John Mitchell	7,500
John Sherwin	9,500
John Sharpless	3,000
John Stanton	9,000
John W. Gates	7,742
John W. Moore	3,300
Joliet	2,697
Joseph G. Butler Jr.	10,000
Joseph Sellwood	10,000
Joshua W. Rhodes	7,500
Josiah G. Munro	10,000
J. Pierpont Morgan	11,200
J. Q. Riddle	10,000
J. S. Dunham	6,800
J. S. Keefe	3,000
J. T. Hutchinson	5,000
Jupiter	4,950
Kearsarge	4,500
Kensington	6,500
Lagonda	4,900
Lake Shore	5,700
La Salle	2,777
L. C. Smith	7,000
L. C. Waldo	7,000
LeGrande S. DeGraff	12,000
Leonard C. Hanna	9,200
Loftus Cuddy	10,000
Louis G. Woodruff	6,600
Luzon	5,000
Lyman C. Smith	10,000
M. A. Bradley	8,000
M. A. Hanna	6,600
Malietoa	7,281
Manola	3,140
Maricopa	6,006
Marina	3,048
Mariposa	3,991
Mariska	3,071
Maritana	3,915
Mars	5,100
Martin Mullen	7,000
Maruba	3,189
Mary C. Elphicke	7,000
Maryland	3,500
Masaba	3,062
Mataafa	6,589
Matoa	3,104
Matthew Andrews	10,000
Mauna Loa	6,589
Merida	5,000
Michigan	10,000
Midland King	6,000
Midland Prince	9,000
Milinokett	9,000
Missouri	1,200
Monroe C. Smith	6,500
Moses Taylor	6,700
Neptune	5,000
Niagara	2,990
Norman B. Ream	11,200
Normania	7,500
Odanah	7,000
Ottawa	3,000
Panay	5,600
Parks Foster	2,900
Pathfinder	3,900
Pendennis White	6,500
Penobscot	7,500
Perry G. Walker	6,600
Peter A. B. Widener	11,200
Peter White	9,000
Philip Minch	8,200
Pioneer	1,746
Polynesia	6,100
Pontiac	3,573
Powell Stackhouse	9,200
P. P. Miller	5,500
Presque Isle	6,258
Price McKinney	7,500
Princeton	7,210
Puritan	3,500
Queen City	6,113
Randolph S. Warner	4,250
Rensselaer	7,305
Republic	4,300
R. E. Schuck	7,000
R. L. Ireland	6,700
Robert Fulton	5,830

NAME OF STEAMER.	CARRYING CARRYING TONS.
Robert Wallace	1,720
Robert W. E. Bunsen	6,918
Roman	3,048
Rufus P. Ranney	7,500
R. W. England	5,440
Sahara	8,197
Salt Lake City	10,000
Samuel F. B. Morse	7,065
Samuel Mather	10,500
Samuel Mather	3,452
Samuel Mitchell	3,158
Saturn	5,000
Saxon	3,109
Saxona	6,645
Selwyn Eddy	4,400
Senator	5,650
Sheldon Parks	10,000
Sierra	8,000
Simon J. Murphy	7,085
Sinaloa	6,625
Sir Henry Bessemer	6,044
Sir Thomas Shaughnessy	8,198
Sir William Fairbairn	5,669
Sir William Siemens	5,697
Smith Thompson	7,500
S. N. Parent	3,000
Socapa	9,204
Sonoma	6,570
Sonora	4,957
Spokane	3,330
S. S. Curry	6,500
Steel King	6,000
Stephen M. Clement	8,600
Sultana	4,933
Superior City	6,893
Sylvania	9,104
Thomas Adams	5,600
Thomas Barlum	8,000
Thomas Lynch	11,200
Thomas Maytham	3,500
Thomas F. Cole	11,200
Umbria	7,000
Uranus	4,960
Venus	4,750
Verona	7,000
Victory	7,000
Viking	1,800
Vulcan	2,970
Wainwright	7,500
Walter Scranton	6,700
Ward Ames	10,000
Wawatam	2,624
W. C. Richardson	5,266
W. D. Matthews	5,800
W. D. Rees	5,200
W. E. Fitzgerald	6,800
Western Star	7,000
W. G. Pollock	7,500
W. H. Gilbert	3,666
Wilbert L. Smith	6,500
William A. Hawgood	10,000
William A. Paine	8,000
William A. Rogers	10,000
William B. Davock	7,300
William B. Kerr	12,000
William E. Corey	10,300
William Edenborn	7,740
William E. Reis	6,700
William F. Fitch	4,900
William G. Mather	10,000
William Henry Mack	5,282
William H. Gratwick	6,700
William H. Gratwick	4,100
William H. Wolf	9,000
William H. Truesdale	8,000
William Livingstone	10,500
William M. Mills	12,000
William Nottingham	6,500
William P. Palmer	2,942
William P. Snyder	9,850
William R. Linn	5,756
William S. Mack	5,300
Wilpen	10,750
Wisconsin	7,000
W. K. Bixby	8,300
W. L. Brown	7,000
W. R. Woodford	10,000
W. W. Brown	5,000
Yale	5,000
Yosemite	5,450
Yuma	4,027
Zenith City	5,454

BRITISH BUILT BULK FREIGHT STEAMERS ON THE GREAT LAKES (STEEL).

NAME OF STEAMER.	CARRYING CAPACITY, TONS.
Acadian	3,000
A. E. Ames	3,000
Algonquin	2,500
Beaverton	3,000
Canadian	3,000
Corunna	3,000
Donnacona	3,000
Dundee	3,000
Dunelm	3,000
Edmonton	3,000
Empress of Midland	3,000
Fairmount	3,000
Glenellah	3,000
Glenmount	3,000
G. R. Crowe	3,000
H. M. Pellat	3,000
J. H. Plummer	3,000
Kenora	3,000
Leafield	2,200
Meaford	3,000
Midland Queen	3,000
Neepawah	3,000
Neebing	3,500
Nevada	3,000
Paliki	3,000
Regina	3,000
Rosedale	3,000
Rosemount	3,000
Scotia	3,000
Scottish Hero	4,000
Stormount	3,000
Strathcona	3,000
Turret Cape	3,000
Turret Chief	3,000
Turret Court	3,000
Turret Crown	3,000
Wahcondа	2,500
West Mount	3,000
Wexford	3,000
Winona	3,000

STEEL PASSENGER AND PACKAGE FREIGHT STEAMERS ON THE GREAT LAKES, BOTH AMERICAN AND CANADIAN.

NAME OF STEAMER.	CARRYING CAPACITY, TONS.
Alberta	3,250
Assiniboia	4,250
Athabasca	3,250
Bennington	3,000
Bethlehem	3,000
Buffalo	6,500
Burlington	3,000
Cayuga	4,000
Chicago	4,000
Christopher Columbus	5,000
City of Benton Harbor	3,000
City of Cleveland	6,250
City of South Haven	2,750
Codorus	3,600
Corona	3,500
Delaware	5,000
Doric	3,000
Duluth	6,500
Eastern States	5,000
Eastland	3,500
Huron	2,800
Huronic	4,000
Illinois	2,500
Juniata	5,000
Keewatin	5,000
King Edward	1,500
Lackawanna	3,000
Lakeside	1,000
Macassa	1,500
Mahoning	3,500
Manitoba	4,000
Manitou	3,500
Mauch Chunk	5,033
Maywood	1,250
Milwaukee	4,500
Minneapolis	2,500
Mohawk	4,000
Modjeska	2,000
Muncy	5,000
Northern King	3,000
Northern Light	3,000
Northern Queen	3,000
Northern Wave	3,000
North Land	5,000
North Star	3,000
Northwest	5,000
North Wind	3,000
Ogdensburg	3,000
Ramapo	4,000
Rochester	5,000
Rutland	3,000
Saranac	3,000
Schuylkill	3,500
Scranton	3,000
Seneca	3,000
Starrucca	4,000
St. Paul	2,500
Superior	4,500
Susquehanna	3,500
Theodore Roosevelt	3,500
Tionesta	5,000
Troy	5,000
Turbinia	2,500
Tuscarora	3,000
Utica	4,500
Virginia	3,750
Western States	5,000
Wilkesbarre	5,275
William Castle Rhodes	2,500
Wissahickon	4,500

MERCHANT MARINE LEAGUE ORGANIZES IN WASHINGTON.

Ex-Governor John H. McGraw has been elected vice president of the Merchant Marine League for the state of Washington and the following prominent men in the state have been appointed on the advisory board: F. E. Goodall, president of the Spokane Chamber of Commerce, Spokane; Dr. N. G. Blalock, president the Blalock Fruit Co., Walla Walla; W. P. Gray, capitalist, Pasco; E. W. Purdy, president First National Bank, Bellingham; D. T. Haun, Spokane Lumber Co., Spokane; L. W. Pratt, Tacoma; S. D. Cameron, physician, New York; A. J. Blethen Jr., associate editor, *Seattle Times,* Seattle; Jacob Furth, capitalist, Seattle; Frank H. Brownell, lawyer, Everett.

This is the first time the Merchant Marine League has had any formal organization on the north Pacific coast and it is expected that the future work of the league in this district will be of great benefit to the interests of American shipping.

NEW CHARTS OF LAKE MICHIGAN.

The United States Lake Survey has just issued the following charts pertaining to its series of navigators' charts of the Great Lakes.

The General Chart of Lake Michigan is a revised edition, and shows the whole lake on scale 1:500,000 (1 inch=about 8 miles), with lights, sailing courses, etc., corrected to date, and incorporating the results of past and recent surveys made under direction of the Corps of Engineers, United States Army.

A new chart showing the harbor at South Haven, Mich., has been prepared from a special survey made by the Lake Survey in 1907, with corrections entered to date of issue; its scale is 1:8,000 (about 8 inches to the mile). This chart shows the street system and other topography of the town, the harbor entrance and the Black River to about two miles above the mouth, and the hydrography of Lake Michigan for about 1½ miles off shore between points 1 mile south

and 1¼ miles north of the entrance piers.

The chart of Cheboygan Harbor is also entirely new, prepared from a special survey made by the Lake Survey in 1907, and engraved on scale of 1:12,000 (about 5¼ inches to the mile). The chart covers the town and the Cheboygan River passing through it, the water front along the south channel of the Straits of Mackinac from Cheboygan light on the east to 2 miles westward of the river mouth, and the hydrography out to deep water in the Straits, with passing and entering sailing courses. All these charts are for sale by the MARINE REVIEW.

SHIP YARD NOTES.

The Philadelphia Ship Repair Co., of Philadelphia, has recently completed extensive repairs to the Ericcson line steamer Anthony Groves Jr., and she has resumed her service on the Philadelphia and Baltimore run.

Mr. John H. Moran, son of Robert Moran, the noted Seattle shipbuilder, has organized the Moran Engineering Co., at Seattle. Associated with him are James D. Mudge and Harold D. Stern. All three of the men are Cornell graduates.

The Moran Co., Seattle, Wash., and the Union Iron Works, San Francisco, Cal., are each to build two of the submarines for the United States navy authorized by the 60th congress. Eight in all are to be built, the other four being awarded to Atlantic coast builders.

The Sumner Iron Works, Everett, Wash., has obtained a contract for repairing the steamer Telegraph, owned by the Oregon & Washington Steam Navigation Co. The work on the vessel will include new high pressure cylinders which will bring her out a tandem compound outfit. There will also be other changes.

Watson, Frye & Co., Bath, Me., are to install the engine and boiler in the steamer which is being built for the Popham Beach Steamboat Co., by the Kelley-Spear Co., of Bath. In addition to the installation of her machinery Watson, Frye & Co. will also make some alterations to the hull.

The entire plant of the Frederick A. Verdon Co., West New Brighton, Staten Island, N. Y., has been acquired by Messrs. George H. Waters, David H. Gildersleeve and Frederic L. Colver. The purchase includes the ship yard, dry dock and marine machinery business. Mr. Waters has for the past six years been superintendent of the Verdon plant. The new incorporation will be known as the Waters, Gildersleeve, Colver Co., with officers as follows: President, George H. Waters; vice president, David H. Gildersleeve; secretary and treasurer, Frederic L. Colver.

The Seaford Marine Railway Co., of Seaford, Del., has an order for a 49-ft. power boat for T. H. Pickford, of Washington, D. C. She is to be a duplicate of the Irene II, designed by Edson B. Shock, of *The Rudder*, and will be equipped with an 18 H. P. engine to be installed by E. M. Fulton, of Baltimore, Md.

The Heffernan Dry Dock Co., Seattle, Wash., recently completed repairs to the hull of the steamship Cecil, which went ashore off the lower California coast in January; the Heffernan Engine Works is at present engaged in repairs to her machinery, to which the greatest damage was done.

W. Irving Adams & Son, of East Boothbay, Me., have a contract for a fishing schooner for J. W. Trefethen & Co., of Portland, Me. The new vessel is to be schooner rigged with an auxiliary 25-H. P. gasoline engine. She will be 70 ft. long, 20 ft. beam and 8½ ft. deep and will be fitted with all modern appliances. It is expected to have the craft ready for launching by May 1.

The Heffernan Dry Dock Co., Seattle, Wash., is repairing the steamer Multonomah, owned by the Olympia & Tacoma Nav. Co. She is to have a new stern, king post, hog posts, sister keelsons, bilge clamps, stack, two bridges through forward and aft. She will be raised 8 in. and after coming out of dry dock will have her engines lined up. She will also be given a thorough refurnishing and repainting.

Charles L. Rohde & Sons, Baltimore, Md., are getting out the frames for two open harbor lighters for Baltimore owners. They are of the same dimensions, being 85 ft. long and 8 ft. deep. The same company is constructing a covered lighter for the Maryland Transportation Co., to be 80 ft. long, 24 ft. beam and 7½ ft. deep. The well-known tug Greyhound has also been practically rebuilt at this yard recently and has undergone a satisfactory trial trip.

The Harlan & Hollingsworth Corp., Wilmington, Del., launched the steel freight steamship New London, March 6. She is one of the two vessels building at that plant for the Vermont Transportation Co. for service between New York and New London. The second steamer will be ready for launching in a few weeks. The dimensions of the vessels are: Length, 296 ft.; beam, 45 ft.

The Moran Co., Seattle, Wash., has obtained a contract for overhauling the steamer Flyer and among the changes will be the installation of a new propeller. The vessel may also be recoppered.

E. W. Heath, Tacoma, Wash., recently launched the gasoline fishing schooner Active which he is building for the Tacoma Fish Co. The Active is 65 ft. long, 15 ft. beam and 6 ft. molded depth.

Capt. Matthew McDowell, of Tacoma, Wash., is to build a set of marine ways at Gig Harbor, near that city. They are to be capable of accommodating a vessel of 200 tons and are expected to prove very popular with Tacoma vessel men.

The Chesapeake Marine Railway Co., Baltimore, Md., is building a two-masted auxiliary schooner for the pilots of Georgetown, S. C. The vessel will be 62 ft. long, 15 ft. beam and 8 ft. deep and will be equipped with a 50 H. P. gasoline engine.

The Gas Engine & Power Co. and the Charles L. Seabury & Co., Consolidated, Morris Heights, N. J., have obbtained an order from J. Adolph Mollenhauer, commodore of the Pentaquit Corinthian Yacht Club, for a steel power yacht 79 ft. 3 in. on the water line and 14 ft. 4 in. beam. She will have a draught of 3. ft. 6 in., and her power will consist of an 80-horsepower Speedway motor which will give her a speed of 14 miles.

The Moore & Scott Iron Works, San Francisco, Cal., are negotiating for the purchase of the marine ways of W. A. Boole & Son, at Alameda, Cal. Since the purchase of the five dry docks of the San Francisco Dry Dock Co., by the Schwab interests, which control the Union Iron Works, that company has reserved all the docks for its own use, thus preventing other San Francisco repair plants from bidding on repair jobs. It is understood that the Risdon Iron Works is to build a dock of its own and it has also been announced that Capt. Harry Goodall and a number of prominent ship owners of San Francisco are forming a syndicate to build a large steel floating dry dock. It is expected that the dock will be built on the Atlantic at a cost of $750,000, and it is to be capable of accommodating any merchant vessel on the Pacific coast.

PACIFIC COAST NOTES.

Office of the MARINE REVIEW.
302 Pioneer Bldg., March 12.

The Nippon Yusen Kaisha steamship Aki Maru, which arrived in Seattle from the orient recently, reported that throughout the entire voyage across the Pacific the vessel was in communication with either the eastern or western shore by means of wireless telegraph. The passage from Yokohama to Puget Sound is 4,240 miles and this is the first vessel that has ever made the trip and kept in communication with the shore all the way. Capt. J. Nagao, master of the Aki Maru, explains that the wireless service was maintained by the aid of other vessels of his line and government stations in Japan and British Columbia. To a point in the Pacific more than 1,000 miles off the Japanese coast, the instruments were almost constantly in direct communication with the Japanese land station. As the Aki proceeded toward America, she was passed by another steamship in the Nippon Yusen Kaisha fleet bound for Japan. By relaying messages, communication with Japan was unbroken until a steamship proceeding out of Puget Sound, which was able to relay messages to stations on the west coast of Vancouver Island, was picked up. The steamships of this fleet were among the first to install wireless apparatus and are now provided with the latest and most powerful equipment.

Changes are pending in the regulations for subsidizing Japanese steamers whereby vessels receiving subsidy must hereafter displace at least 3,000 tons and steam 12 knots an hour instead of 1,000 tons and 10 knots as at present. The age limit is to be newly stipulated, being 15 years. Half the amount of subsidy given to Japan built ships is to be granted foreign built ships. The stipulations concerning foreign employes are not changed. The new rate of subsidy is $5.50 to $11.00 per ton instead of $6.00 to $10.00. The Nippon Yusen Kaisha (Japan Mail Steamship Co.) is strongly opposed to the new subsidy and declares that it will suffer a great blow if the law is enforced. Vice President Kato says the company will be obliged to immediately abandon its European line. Vessels are to be yearly deprived of 5 per cent of their subsidy when five years elapses after their construction and after 15 years the subsidy will be stopped.

The ship yard of the Moran Co., Seattle, is busier at present than it has been for some time past. Work on the two light draught river steamers for Alaska is progressing rapidly and the planking has been started. The revenue cutter Thetis is undergoing minor repairs, as are also the steamers City of Seattle and Patterson, the latter being a government vessel employed by the Geodetic Survey. The steamer Farallon is being cleaned; the Port Orchard has been docked and painted and the Flyer is undergoing thorough overhauling.

The Union Steamship Co. operating the Canadian-Australian line of British steamers between Australia, New Zealand and British Colombia ports has decided to build a new liner similiar to the Makura. The new vessel is to cost $2,000,000 and will be built at Stephens' yards at Linthouse-on-the-Clyde, where the Makura was built. The Union Steamship Co. is asking for a larger subsidy of $100,000 extra yearly. The present subsidy is $325,000, contributed by Canada, Australia and Fiji, Canada paying the largest proportion.

The fast steamer Flyer that has operated for over 15 years between Seattle and Tacoma is undergoing an extensive overhauling at the yards of The Moran Co. in preparation for the summer season. She will be cleaned and painted, the cabins will be renovated and several alterations will be made to add to her speed. A new bronze propeller of an improved design is being cast for the vessel.

A new steamship line has been organized in Portland to operate a fast freight and passenger service between Portland, Ore., and San Francisco. It is said that the new line will operate in connection with the Spokane, Portland & Seattle Ry. It is reported that the steamers Yale and Harvard, now lying at East Boston, have been purchased for the use of the new company, but this cannot be verified.

The senate of the California state legislature has passed a bill providing for a bond issue of $9,000,000 for the improvement of San Francisco harbor.

The contract for the construction of the submarine Pickerel and Skate has been officially awarded to The Moran Co., of Seattle. These boats will be somewhat larger than the Octopus type and will be the latest models of their kind, although the detailed plans are a secret of the department. The vessels will be built under the supervision of naval constructor T. F. Ruhm, who has been detached from duty in the bureau of construction and repair at Washington and ordered to Seattle.

The Japanese armored cruiser Aso and the protected cruiser Soya are expected to arrive at Honolulu April 1, from which they will proceed to San Francisco, Seattle and possibly other Pacific coast points. Both ships are former Russian vessels sunk in the Russian-Japanese war and afterward floated by Japan and added to the Japanese navy.

The German steamer Hermonthis collided with a French bark at San Francisco March 5 and will be detained at the California port a week making repairs. The liner has 1,000 tons of sugar from Peru for Vancouver, B. C., to which port she will proceed as soon as she is in a fit condition to go to sea.

The steamer Alaskan, owned by the Northland Steamship Co. is offered for sale. She is now laid up at Eagle harbor, Wash. She formerly plied between Seattle and southeastern Alaska ports but has been replaced by the steel steamship Northland.

The United States revenue cutter Perry has arrived on Puget Sound from Alaskan waters to be outfitted and overhauled for the coming summer cruise in Bering sea.

A CHANCE FOR CLEVELAND CAPITAL.

Editor MARINE REVIEW:—Cleveland is a shipbuilding center and if you have any builders of enterprise that want to strike something greater than usual, I can offer them an engine that is destined to supplant all other marine engines and the sooner Cleveland gets on to this engine the better for Cleveland builders and contractors, of course. My real object is to get some one to help me start building for trial and ultimately to restore the American merchant marine on the salted seas. I have after 40 years invented the perfect rotary engine, cheaper built, simpler and no trouble in the matter of packing for there isn't any. Can be run with steam or atmospheric air, in which latter case *there is no fuel.* With coal, 200 lbs. would run the biggest lake boat 24 hours. It is a wonder and I have no patent for I am too poor to get the engine built as the government requires a model. It is worth to a syndicate $100,000,000 if it is all I believe it to be. There is nothing that can establish our trade on the seas as an engine that will run without fuel. *It is a wonder* and if some Cleveland firm will furnish me with $300 I'll build a test for them. I have not offered it here.

CHARLES ROGERS.

370 State street, Chicago, Ill.

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LAKE SHIP YARD METHODS.

The MARINE REVIEW some time ago published a book by Mr. Robert Curr entitled "Lake Ship Yard Methods of Steel Ship Construction". It has proved to be one of the most valuable books for the shipyard worker ever written and is the only book in existence describing the methods in the shipyards of the great lakes. Considerable interest obtains in the work and it has been seized upon eagerly. It appears to be of equal interest abroad as well as at home. It has gone into every shipbuilding country, especially Great Britain, Germany, and Norway. Howard Saunders of Brooklyn, N. Y., writing of it says:

"I am astonished at the amount of good practical knowledge it contains. It is clear, concise and instructive and an invaluable book to anyone interested in shipbuilding. There is one article in particular relating to the expansion shell plating of stern which is worth many times the cost of the book. I recall in my experience at ship building times when a book of that kind would have helped me out of many a difficulty."

LAKE CARRIERS' WELFARE PLAN.

The welfare plan of the Lake Carriers' Association is working out well, Mr. George Marr, the secretary of the association, being extremely busy issuing certificates of registration, though the certificates which he issues are only to masters and engineers. About 500 applications for certificates have been made by masters, mates and engineers. All certificates other than to licensed officers are issued by the shipping commissioners. Numerous applications to the shipping offices are also being made.

To each man below the grade of master and chief engineer, there will be issued with the certificate a record discharge book in which will be noted the record of his service upon each vessel. The benefits which accompany the plan in case of accident apply to all. They are to be paid at once without even waiting for inquiry and such payment will have no bearing whatever upon the future liability of the ship. The whole purpose of the plan is to provide immediate relief. Foreign journals are now paying attention to the various features of this plan and are commending its spirit highly.

The welfare plan of the Lake Carriers' Association is no new thought. It has been evolved slowly. It has been in mind for the past 15 years or more; in fact ever since the Lake Carriers' Association was formed. The first thing that the association did was to improve living conditions aboard lake steamers. Then gradually the thought came of establishing club rooms in the principal ports where seamen might meet, small dues being assessed in order to carry with it the feeling of independence, coupling with the plan a form of mutual insurance against the natural vicissitudes of the business. This plan took definite form in 1902.

Before it could be put into effect, however, some of the unions proposed to undertake the work if contracts were made with them for supplying men aboard ship, and the plan was accordingly set aside in order to give the unions the opportunity they sought. For five years thereafter the contract system with the unions was followed. At no time, however, was it found satisfactory. From the beginning there was complaint from the masters and mates that they could not get the customary work out of the deck hands; complaint from the engineer and his assistants that disipline could not be maintained in the firehold; that all duties aboard ship were subordinated to the interpretation of technical questions of contract between the men and the union. In other words, the men derived their pay from one source and took their orders from another. The situation became intolerable and at the close of the season of 1907 the Lake Carriers' Association determined to have no more of it. Open shop was accordingly declared and the welfare plan picked up where it had been left in 1902. It is gratifying therefore to note that applications for membership under the conditions of the plan are numerous. With the earnest co-operation of the men it can be made of permanent benefit with the assurance that everyone embraced within its provisions will have a square deal.

The Lake Carriers' Association has printed the context of the welfare plan in the form of a convenient pamphlet and it would be well for everyone employed aboard ship irrespective of his rank to obtain a copy of it. He can doubtless get it by addressing the secretary of the association, Western Reserve bldg., Cleveland, O.

JAPANESE SHIPBUILDING AND SHIPPING.

The return of the director of the Mercantile Marine Bureau indicates that the Japanese yards, like others, have suffered from the prevailing ship building depression, but only to a limited extent. It is in a measure surprising to note that, at the end of the last financial year, there were 224 ship building yards, excluding those de-

voted to the building of junks. This is ten more than in the previous year. Most of the works, however, seem to be engaged in building small sailing craft, of which 220, of an aggregate of 16,841 tons, were constructed, being 176 (of 8,041 tons) less than in the previous year. Of steam vessels, there were built 76 (of 28,838 tons), being 13 vessels and 3,157 tons less than in the previous year. As to shipping owned in Japan, there has been an increase, especially in the steam craft, the number at the end of the year being 2,223, of 1,116,945 gross tons, the increase on the year being 75,376 tons. Of sailing vessels there were 4,811, totalling 365,950 gross tons, an increase of 12,594 tons. In junks, however, there has been a decrease of 1,997, the total now being 20,635 tons. An analysis of the whole shows that the addition of new tonnage is considerably greater than that removed from the register through disaster and other causes, so that there is a material improvement in the average efficiency of the shipping. Ten large ships were built under the shipbuilding encouragement certificate system, and 20 more are in course of construction. Navigation encouragement certificates were granted to 20 vessels. These ships were for service to Europe, America, the Ocean Islands, Bombay, Java, Vladivostock, China, and Korea.

PIG IRON SITUATION.

A fair amount of new business is being received by the steel mills, and for the most part, prices are being solidly maintained. Some low prices are being made on fabricated steel, but the price of the plain material seems to be maintained. Proposed wage reductions in eastern Pennsylvania have been declined by the Amalgamated Association and strikes may result. The pig iron market is extremely dull. Prices are declining, and sales are being made at $11.50 Birmingham for No. 2. Northern prices also show weakness. Considerable activity in structural steel is noted, and the Carnegie Steel Co. has taken some satisfactory orders for plates as well as steel rails. The demand for sheets has improved in the west, but there is some shading of prices. The reduction of $5 a ton on tin plate was quite a surprise to the trade. Specifications on steel bar contracts are improving, and the price of 1.20c Pittsburg is being adhered to. Bar iron is dull. Some coke for six months' requirements is being contracted for. Prices are weak in the old material market.

NEW LOCK AT THE ANTWERP HARBOR.

The two new harbor basins, which were opened in the year 1907, and to which access has hitherto been by the somewhat round-about way via the Kattendijk Dock, were on Dec. 2 last placed in more direct communication with the Schelde through the so-called Royer's Lock, which leads into the Lefebore Dock, and which was that day opened to shipping. The new lock is both larger and better equipped in every way than the two old locks, through which the harbor authorities would allow no vessels of more than 21 ft. depth to pass; ships with a greater draught were compelled to discharge part of their cargo into lighters in the river, a process entailing both expense and considerable loss of time, and causing much dissatisfaction all round. The new lock will admit of vessels with a draught of up to 30 ft. going straight to their appointed place in the dock. There are three gates which are worked by electricity; of the two lock chambers, the one is 243 ft., the other 337 ft. long; when vessels of a greater length have to be dealt with, the intermediate gate can be opened, giving an available aggregate length of 580 ft.

THE ITALIAN NAVY.

The *Rivista Marittima* recently published in pamphlet form two essays it had received in reply to a non-official competition it had instituted among the officers of the Italian navy. The competitors were asked to state the features that should characterize Italian battleships, and to give a scheme for navigating a fleet formed of units of the type proposed, so as to establish contact with an opposing fleet of similar power. The author, a navigating officer, who was awarded the first prize, proposed:

A battleship armed with eight 12-in. guns mounted in pairs in four turrets; fort, aft, and on the port and starboard sides; arc of training of fore and aft turrets, 270 degrees; arc of training of lateral turrets, 180 degrees on their respective sides and 90 degrees athwartship. Eight 6-in. 50-calibre guns, firing a projectile weighing 100 lb., with a 3,050-ft. muzzle velocity; rapidity of fire, ten rounds per minute; mounted in four side turrets, firing directly forward, or aft, and round an arc of 135 degrees to port, or starboard. Twelve 3-in. guns, distributed symmetrically in the bow and stern, above the belt armor, and firing through embrasures. The ammunition on board should consist of 100 rounds for each 12-in. gun, 75 being capped armor-piercing projectiles and 25 with shells suitable for destroying land defences; 250 rounds for each 6-in. gun and 300 rounds for each 3-in. gun. Torpedo-launching tubes forming the most effective means of defense of a ship which has otherwise become incapacitated, there should be two lateral submarine tubes, but neither bow nor stern tubes. The protection should consist of belt-armor 8 in. thick over 70 per cent of the length amidship, 4 in. thick round the bow and the stern; 12-in. gun-turret armor 8 in. thick; 6-in. gun-turret armor 6 in. thick; conning turret armor 12 in. thick; base of funnels to practically level with conning-tower protected by 4-in. armor; no torpedo netting—this to be fitted on subsidiary ships only; tonnage, 16,000 tons; 24,000 H. P.; capacity for fuel, 1,750 tons; turbine-driven; speed, 22 knots. The navigating officer and author of the essay which was awarded the second prize advocated a battleship of 16,000 to 17,000 tons, fitted with turbines developing 30,000 H. P., having a maximum speed of 23 to 23.5 knots; armed with eight 13-in. or 13.5-in. guns, mounted in four turrets, two fore and two aft, in the axis of the ship, the guns in the two middle turrets, when aimed directly forward or aft, firing directly above the two end turrets; arc of training of all four turrets, 320 degrees; twenty-four 3.5-in. or 4-in. guns, firing through embrasures in the broadsides above the belt armor, mounted in pairs on 12 disappearing mountings; arc of training of each gun pair, 120 degrees; two submarine torpedo-launching tubes, or two tubes on deck (if the latter, room might perhaps be found for four); protection afforded by belt armor 10 in. thick, tapering down to 6 in. at the ends and lower edge; 12-in. gun-turret armor 10 in. thick; conning-tower armor, 13¾ in.; armored deck, 3-16 in. thick. Both essays give further interesting data on the desiderata which should be met in capital ships destined for the Italian navy, and also in the second, the tactical, portion of the program set forth by the Italian *Maritime Review*.

The state harbor commissioners have accepted the offer of the Western Pacific Railway Co. for the lease of Pier 34 at San Francisco. The offer is $167,730, the cost of the proposed pier and is advance payment of rent for 180 months. The pier will be built by the Associated Contracting Co. for $167,730.

SHIPPING WORLD YEAR BOOK.

The Shipping World Year Book, edited by Major Jones, and published by the Shipping World, Effingham House, Arundel street, London, W. C., England, has just been issued for 1909. This book is a standard directory of trade, commerce and navigation and is now in its twenty-third year. Annually it has grown until it has become of monumental proportions. The tariffs of all countries have been corrected up to Jan. 1, 1909. The port and harbor directory of the world with charges, tides, trades, pilotage and towage has been revised up to the last minute. Among the new features is a list of the new wireless stations open for the transmission of oversea messages. There is also incorporated a map in colors showing the routes of steamers and railways throughout the world. As usual, Major Jones gives a retrospective view of the year just closed, saying:

A Retrospective View of 1908.

The year 1908 has been remarkable, not for inventions and improvements in science and mechanics, but for depression in the world's commerce and the industries, perhaps without parallel in history. The low freights of 1907 further declined in the succeeding year; and the situation was confused and aggravated by conflicts between employers and employed (especially in the engineering branches of shipbuilding), having their origin in demarcation disputes among the men, and their rejection of the proposals of the employers, which stipulated for a reduction of earnings both in piece-work and wages. Finally, after many consultations and confusing ballotings, agreement was reached. Better still and more significant are the two great events which grew out of these labor troubles. First, the conversion of the shipyards of Messrs. Furness, Withy & Co., Ltd., into a copartnership business in which every employee has become a shareholder and profit sharer; and second, the agreement entered into between the Shipbuilding Employers' Federation and the Shipbuilding Trade Unions, whereby machinery is set up for prompt dealing with all disputes, and settling the same by joint conciliation boards and a final joint conference, all without any suspension of work.

The severity of industrial depression during 1908 will be appreciated when we point out that the decline in the world's shipbuilding, including naval and commercial tonnage, is represented by 419 ships, having a volume of 955,198 tons; the falling off in the output of the United Kingdom being 253 ships, measuring 691,854 tons.

Ships and Engines of the Year.

Although there is no great invention to be placed to the credit of the year 1908, the new types of ships, for carrying oil in tanks, trimming coal and grain cargoes, and reducing the number of decks to one, have made good progress. They ensure a substantial saving in weight and therefore in register tonnage and fees, and have demonstrated the accuracy of the calculations of inventors, and justified the confidence of the registration societies in giving the highest class to these types.

The opinion has been strengthened that the turbine itself is not the most suitable machinery for the propulsion of cargo vessels of moderate speed; and the solution of the difficulty has been found in a combination of the reciprocating engine and the turbine. This combination has been adopted for several vessels of different sizes, including big Atlantic liners now being built in Belfast.

Some progress is being made with gas engines in marine propulsion; and Messrs. Beardmore, of Dalmuir, who have been working and experimenting assiduously at this problem, are confident of winning important results. Oil engines, especially in small craft, are multiplying rapidly, and the advantages they offer in weight, space, and cleanliness over steam engines, must continue to tell in their favor.

The Big Cunarders.

The experiences of the Lusitania and Mauretania have enjoyed the full blaze of public criticism and comment, and it is unnecessary to write at any length of the practical trials and their valuable lessons. Let us, therefore, be content to say that the Cunard Company have realized their anticipations in respect of speed, while the government conditions have been fully met.

Changes in Import Duties.

Readers who are interested in duties on imports will remember that we were only able to give in the edition of 1908 the schedules and particulars of the tariff of the Australian commonwealth as they appeared in the bill at its second reading; many changes were afterwards made by the commonwealth parliament, and these are all incorporated in the tariff as it appears in this volume of the Year Book. The tariffs for Denmark and Venezuela are entirely new, having become law during 1908. It should be remembered that the French tariff we publish is that which became law in June, 1907; but there has appeared a proposed new French tariff, recommended by the customs commission of the French chamber of deputies, and this has been published by the board of trade. We would point out, however, that the changes made in the schedules are only proposals; they do not represent duties levied upon imports entering France; nor is it probable that the tariff will be adopted in its present form. Therefore, we have not published the "Proposed Tariff", for it could only serve to mislead until it becomes law. Should it be adopted during the year 1909, the fact will be dealt with in our weekly publication, the *Shipping World.*

FAST TURBINE STEAM YACHT.

Messrs. Cox & Stevens, naval architects of New York, have just placed an order through their London representatives, Messrs. Cox & King, with Messrs. Yarrow & Co., of England, for a turbine steam yacht that will be faster than any vessel of her type yet built and will attract much attention on her arrival in these waters this summer.

The hull is being built of special high tension steel, the motive power will consist of three Parsons turbines supplied with steam by two Yarrow boilers using oil fuel; this will be the first yacht to have the combination of turbines and oil fuel, although many modern torpedo boats are equipped in this manner and most satisfactory results have been obtained. Better than 30 statute miles an hour is anticipated and there will be interesting trials of speed between this craft and the new boat being built in this country for Mr. M. C. D. Borden.

The length will be about 170 ft., beam 17 ft., and she will have unusually good accommodations, the owner having three double staterooms, two bath rooms and a large and attractive saloon aft; while in the deck house forward will be a dining room capable of seating 12 guests comfortably.

As she will have to cross the ocean under her own power, and as the designers wished to produce a good serviceable craft, she has been given good freeboard and as powerful a form as possible under the circumstances; the deck line forward is quite full and is associated with sharply flaring sections that will tend to keep spray from coming aboard.

The details of the design and the superintendence of the vessel while under construction will be in the hands of Messrs. Cox & King, of London, with which firm Messrs. Cox & Stevens have combined their interests as far as concerns buying, building or chartering vessels abroad. This business arrangement will be beneficial to both firms and to their clients, and will greatly simplify any further transactions of this character, as all details can be attended to equally well either from the New York

or London office as may be most convenient in each instance.

The appearance of this craft will be striking, as she will be painted black, her house and skylights will be teak, the awnings khaki, and with the two large stacks and good freeboard will suggest power and speed in every line.

LOG OF WRECKER FAVORITE.

The Great Lakes Towing Co. has issued as a souvenir the wrecker Favorite's log for the season of 1908. This log was published in the MARINE REVIEW of January 7, Ship Building issue, but those who are the recipients of the souvenir will be glad to preserve it. It is put together in the most attractive manner. The souvenir is illustrated, not with half-tones, but with platinum photographs from original negatives. There are 15 of these photographs illustrating various parts of the ship. The photographs of wrecking equipment and of the machinery are especially good. The souvenir closes with a facsimile letter from Capt. W. W. Smith, marine superintendent of the Pittsburg Steamship Co., in which he commends the work of the Favorite highly. The concluding picture is an excellent portrait of Capt. W. W. Smith.

AROUND THE GREAT LAKES.

Mr. Godfrey Morgan has been appointed manager of the Kellogg elevators to succeed Mr. George E. Pierce who takes charge of the Wheeler elevators.

The Northern Michigan Transportation Co. purchased the light-house tender Dahlia at the auction sale last week for $5,400. The Dahlia was built in Philadelphia 35 years ago for service on the great lakes.

The Great Lakes Steamship Co., Toronto, Ont., which is a recent incorporation, will engage in the operation of steamers in the lake trade. Negotiations are under way for the construction of one or more steamers for delivery next spring.

Bids were received by Major Charles Kellar on March 5 for improving St. Joseph Harbor and river, Michigan, as follows: The Green Stone & Quarrying Co., Sawyer, Wis., $2,714.40; Thomas H. Smith, Sturgeon Bay, Wis., $2,954.64; Bennett-Schnorbach Co., Muskegon, Mich., $3,042.00; Great Lakes Dredge & Dock Co., Chicago, Ill., $3,962.40. For improving South Haven Harbor, Mich., bids were received as follows: Thomas H. Smith, Sturgeon Bay, Wis., $3,598.95; Bennett-Schnorbach Co., Muskegon, Mich., $3,780.00; Great Lakes Dredge & Dock Co., Chicago, $4,169.70.

Appointments of Masters and Engineers of Lake Steamers.

ALGER, SMITH & CO., DETROIT, MICH.

VESSEL.		CAPTAIN.	ENGINEER.
Str.	Gettysburg	Norman McGuire	James Kimberley

ARGO STEAMSHIP CO., CLEVELAND, O.

Str.	Argo	George Cottrell	———
"	Sachem	W. W. Randall	———
Bge.	George Owen	R. C. Smith	———

ASHLEY & DUSTIN, DETROIT, MICH.

Str.	Frank E. Kirby	A. J. Fox	Julius Holder

J. E. BALL, MGR., MILLER STEAMSHIP CO., BUFFALO, N. Y.

Str.	P. P. Miller	Frank Weinheimer	William C. McDougall

JOHN J. BARLUM, M. O., POSTAL STEAMSHIP CO., DETROIT, MICH.

Str.	Thomas Barlum	A. J. Mahon	John Hughes
"	John J. Barlum	M. J. McIntosh	Terence O'Connor

C. BECK MFG. CO., LTD., PENETANGUISHENE, ONT.

St. Bge.	C. W. Chamberlain	Bert Burke	William H. Carefoot

GEORGE F. BELL, TOLEDO, O.

Bge.	Charles Wall	Andrew Haganey	

C. F. BIELMAN, DETROIT, MICH.

Str.	C. F. Bielman	John G. Ivers	Alex Alex Wheelan

BUFFALO DREDGING CO., BUFFALO, N. Y.

Tug	Charles E. Williams	Murry S. Maines	James H. Martin
"	Pliny B. McNaughton	Thomas Green	Joseph Morris
"	William H. Kinch	William G. Fox	William H. Calland

THE CALVIN CO., GARDEN ISLAND, ONT.

Str.	Prince Rupert	A. H. Malone	R. H. Veech
"	Simla	P. Sullivan	R. Mullen
"	India	Charles Coons	T. C. Smith
"	D. D. Calvin	———	———
"	Chieftain	C. E. Phelix	Thomas Gray
"	Parthia	D. Lefave	George Sauve
Tug	Frontenac	J. Harris	Thomas Campau
"	Johnston	William Phelix	John Simons
Sch.	Burma	J. Ferguson	
"	Ceylon	C. Beaupre	

THE CANADIAN LAKE & OCEAN NAVIGATION CO., LTD., TORONTO, ONT.

Str.	Scottish Hero	Peter McIntyre	R. R. Foote
"	Turret Court	Robert McIntyre	L. McMillan
"	Turret Cape	R. D. Simpson	P. Bonham
"	Turret Chief	H. Boult	A. E. Kennedy
"	J. H. Plummer	William McLean	Robert Chalmers
"	A. E. Ames	A. McIntyre	S. Gillespie
"	H. M. Pellatt	W. H. Anderson	W. H. Durham

CANADIAN LAKE TRANSPORTATION CO., LTD., TORONTO, ONT.

Str.	Corunna	D. C. McLachlan	H. McDonald
"	Nevada	J. Cavanagh	William Linton
"	Arabian	J. E. Mann	W. H. Taylor
"	Kenora	William Brian	William Byers
"	Regina	Peter McKay	C. J. McSorley
"	Tagona	J. S. Moore	Robert W. Ross

CANADIAN PACIFIC RAILWAY CO., WINDSOR, ONT.

C. F.	Ontario	James Carney	Alex McDonald
C. F.	Michigan	Charles Jenking	Fred Merrill

CARBRAY, SON & CO., MGRS., QUEBEC, CAN.

Str.	Russell Sage	Henry Russell	George Adams

E. T. CARRINGTON, BAY CITY, MICH.

Bge.	Allegheny	W. H. Bridges	

CENTRAL CANADA COAL CO., LTD., BROCKVILLE, ONT.

Str.	Samuel Marshall	James Martin	William McCabe

CHURCHILL LUMBER CO., ALPENA, MICH.

Str.	W. J. Carter	William Ziem	Horace Carter

COLLINGWOOD SHIPPING CO., LTD., COLLINGWOOD, ONT.

Str.	Wasaga	H. N. Smith	Moses Johnston

M. J. CUMMINGS, OSWEGO, N. Y.

Str.	Western Star	Edward Hendricks	Charles Moderson

DAVIDSON-GALLMEYER LUMBER CO., TOLEDO, O.

Sch.	Julia B. Merrill	William McQuinn	

J. R. DAVOCK & CO., MGRS., CLEVELAND, O.

Str.	Rufus P. Ranney	Henry W. Stone	Robert C. Cummings

CAPT. FRANK F. DESOT, TONAWANDA, N. Y.

Sch.	Commodore	Frank F. Desot	

DETROIT & CLEVELAND NAVIGATION CO., DETROIT, MICH.

Str.	City of Cleveland	A. J. McKay	James H. Milen
"	City of St. Ignace	John Lightbody	George Bayley
"	City of Detroit	A. M'Lachlan	John Hall
"	Western States	F. A. Stewart	Andrew Carter
"	Eastern States	Duncan M'Lachlan	M. E. Sickelsteel
"	City of Alpena	Machen Lightbody	A. Phillips
"	City of Mackinac	F. J. Simpson	Robert H. Maxwell
"	City of the Straits	Salem Robinson	William Braden
"	State of New York	Eugene Hayward	N. J. Fanning

DETROIT RIVER TRANSIT CO., DETROIT, MICH.

Str.	Desmond	J. B. Watts	S. H. Braund
"	John Otis	E. J. Donoghue	Henry Minnie

DIXON & BROWN TRANSPORTATION CO., CHAUMONT, N. Y.

Str.	A. L. Hopkins	Alfred Dixon	Laurence Brown

DOHERTY & MEEHEN, BELLEVILLE, ONT.

Sch.	Keewatin	James Doherty	

ROBERT DOWNEY & CO., OSWEGO, N. Y.

Str.	Monteagle	Stephen M. Murphy	J. F. Mahaney

CAPT. E. ERICKSON, RACINE, WIS.

Sch.	J. A. Holmes	E. Erickson	

GEORGE E. FAIR, MGR., FARRAR TRANSPORTATION CO., LTD., COLLINGWOOD, ONT.

Str.	Collingwood	F. A. Bassett	D. McLeod
"	Meaford	E. Scott	J. Smith

J. A. FRANCOMBE, DETROIT, MICH.

Str.	W. R. Stafford	Theodore Grant	Fred Holder
Sch.	Ed. McWilliams	William McCarthy	

GRAHAM & MORTON TRANSPORTATION CO., CHICAGO, ILL.

Str.	City of Benton Harbor	A. J. Simens	L. H. Sebastian
"	City of Chicago	William J. Russell	William F. Johnson
"	Holland	John Stewart	Otis Richardson
"	Puritan	W. A. Boswell	Byron Beerman
"	City of Traverse	Edwin Williams	W. A. Bradley
Tug	Bonita	Charles Morrison	James McAntee

GRAND TRUNK MILWAUKEE CAR FERRY CO., MILWAUKEE, WIS.

Str.	Milwaukee	C. A. Lyman	Eugene Scott
"	Grand Haven	S. O. Marsh	Robert Blocker

GRAND TRUNK RAILWAY CO., WINDSOR, ONT.

		John Jackson	William Belsom Sr.
Str.	Landsdowne		
		Hy Oldenberg	Alexander Cook
"	Great Western	Michael Bausette	William Jamison
		Oscar Lalonde	Joseph Ladds
"	Huron		
		Alex Baillargeon	William Belson Jr.

CAPT. FRANK GRANVILLE, CHATHAM, ONT.

Sch.	Hattie Hutt	Frank Granville	

GREEN BAY TRANSPORTATION CO., GREEN BAY, WIS.

Str.	Fannie C. Hart	Gus LeComte	George Hebert
"	Eugene C. Hart	Jake Roulette	John Enderby

CAPT. JOHN GREEN, BUFFALO, N. Y.

Str.	Lewiston	Olaf Nelson	James Green

THE GREEN STONE & QUARRYING CO., SAWYER, WIS.

Tug	Torrent	H. Tufts	A. Swan

GEORGE HALL COAL CO., OGDENSBURG, N. Y.

Str.	John Rugee	D. Hourigan	E. A. Barker
"	Fred Mercur	W. A. Russell	J. W. Estes
"	Henry B. Hall	S. V. Anderson	R. G. Jardin
"	Hecla	Joseph Richard	William Thompson
Sch.	Walter A. Sherman	M. Hourigan	
"	Jennie Matthews	F. D. Linn	
"	Mary Lyon	George Abbott	

HAMILTON STEAMBOAT CO., HAMILTON, ONT.

Str.	Macassa	James Henderson	O. Flumerfelt
"	Modjeska	P. Walsh	W. Noonan

WILLIAM J. HARLOW, TOLEDO, O.

Str.	Harlow	W. J. Harlow	M. McNamara

AUSTIN HARRINGTON, MGR., RESORT STEAMBOAT CO., HOLLAND, MICH.

Str.	Mary	A. Harrington	M. D. Woodruff

HUGH R. HAVEY, DETROIT, MICH.

Str.	Ionia	William McLean	John Bloom
"	Miami	H. Huyser	Samuel Radcliff
"	W. P. Thew	William Duncan	D. Barron
Sch.	A. Gebhart	R. Harris	
"	M. Carrey	H. Tracey	

J. F. HENRY, MANAGING OWNER, SAUGATUCK, MICH.

Str.	Saugatuck	John Campbell	————

HERMAN H. HETTLER LUMBER CO., CHICAGO, ILL.

Str.	T. S. Christie	P. Larsen	Henry Gibson
Bge.	Interlaken	Fred Nelsen	

ATLANTIC COAST NOTES.

Office of the MARINE REVIEW,
Room 1005, No. 90 West St.,
New York City.

The steamer Massachusetts, of the New England Navigation Co., which grounded near Cedar Tree Neck through losing her course in a fog on March 10, while bound from Boston for New York, was floated on Sunday. According to report the Massachusetts has suffered little damage. She proceeded to New York under her own steam.

The steamer H. F. Dimock, of the Metropolitan Line, which was grounded on Nauset Beach on March 10 after running down and sinking the steamer Horatio Hall, of the Maine Steamship Co., was also floated on Sunday and left for Boston under her own steam. She had the assistance of a fleet of tugs. The Dimock collided with the Horatio Hall in Pollock Rip Slue, the latter vessel sinking to her hurricane deck. She lies in a dangerous position and is in the hands of wreckers.

The oil tank steamer Helios, from Shields, arrived at New York this week with jury-rigged steering gear. During heavy weather encountered on March 11, while some 450 miles east of Sandy Hook, the Helios suffered a fracture of her rudder post. Temporary repairs were made with which the steamer traveled 160 miles. Later, when the weather had calmed to some extent, lines were attached to the rudder blade, enabling the Helios to make port.

The steamship Florida was sold during the past week to Charles W. Bowring & Co., shipping agents, New York, her price on resale being $175,000, or $45,000 less than on the occasion of her former sale to M. A. Mosle. It is estimated that it will cost about $60,000 to dry dock the Florida and repair her crushed bows. The price at which she was knocked down is understood to about represent her value as she now lies at the Bush Terminal Docks.

The steamer Finland, of the Red Star Line, will take the place of the wrecked Republic on the sailing list of the White Star Line. The Finland will be replaced by the new steamer Gothland in the Antwerp-New York service.

With the object of furthering arrangements for the establishment of a new steamship line between New Orleans and Philadelphia, Mayor

Behrman of New Orleans and a party of southern business men visited the latter city last week. Mayor Behrman advocates the establishment of the steamship line by the two municipalities in case private concerns should decline to make the venture.

An unusual quantity of ice is reported in the track of trans-Atlantic liners, incoming vessels having encountered large ice floes in the vicinity of Cape Race. In several cases the course of vessels had to be altered to avoid coming in contact with ice fields and bergs. The steamer Furnessia, of the Anchor Line, from Glasgow, arrived at New York last week with her bows slightly damaged through encountering ice.

The government wireless telegraph station at Cape Henry is to be abandoned and the wireless apparatus sent to Beaufort, N. C., for the establishment of a modern two-pole station at that point. Such a system has been recently established at the Norfolk navy yard, the Norfolk station having been found to operate more successfully than the single-pole station at Cape Henry, though 20 miles from the sea coast.

The schooner Ann J. Trainor, from Norfolk for New York with a cargo of lumber, was towed into the harbor on Saturday with only her foremast standing, she having lost her other masts in a gale encountered on March 4, on which date the captain was also injured. After the vessel was dismasted the sea calmed somewhat and sail was made on the only remaining mast. Captain Derrickson reported that trouble was experienced with the crew of negroes and Portugese, who were anxious to abandon the Trainor for the safer decks of the passing steamers spoken. He was suffering from a fractured rib, due to being struck by a boom.

The bark Good News is now bound for New York with the first shipment of California asphalt to be sent east in years. The owner, W. J. Grandfield, sent the vessel to Puget Sound last year with a cargo of dynamite. She was so long making the run that it was feared she had met with disaster. She arrived eventually, however, having suffered some slight damage to her rigging and encountered adverse weather.

Two sailing vessels from the far east on long runs of 14,000 miles each passed Cape Henry last week, from Hongkong for Baltimore. They were the British barks Eclipse and Juteopolis and were bringing cargoes of matting. The time taken averaging about five months.

The British steamship Vizcania, from Boston for Philadelphia, was in collision with the schooner Francis S. Goodnow on March 12, near Nantucket Shoals. The Goodnow, which escaped with slight injury, arrived at Hyannis, Mass., in tow of the revenue cutter Gresham, the Vizcania proceeding on her voyage.

At the request of Major Porter, of the Lighthouse Bureau of the United States army, Senator Payne introduced a bill at Albany last week to permit the acquisition by the federal government of land on Staten island near the Richmond court house, as a site for a lighthouse to overlook Ambrose channel.

The three-masted schooner Mystic, of the Gilbert Transportation Co.'s fleet, put into Newport harbor last week minus all her fore rigging and short of water and provisions. The Mystic left Jacksonville, Fla., for New Haven, with a cargo of lumber, on Feb. 19. When off Barnegat she encountered a heavy storm and was blown 180 miles off her course.

The lawyers of M. A. Mosle, who obtained a motion for a hearing why the sum deposited by the purchaser at the first sale of the steamship Florida, which was not completed, should not be returned to him, have made application for that motion to be postponed. For the present it is not likely that this issue will be raised, and, pending the order of the court, the deposit of $16,000 is held by commissioner Alexander.

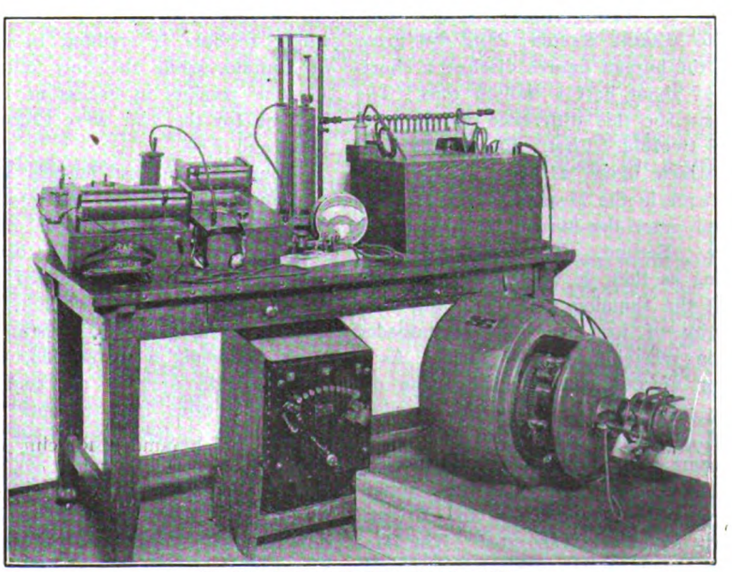
The Mallory Line steamer Brazos, which arrived at New York on Monday from Galveston, made the fastest run on record between the two ports. She covered the entire course of 2,200 miles in 4 days, 15 hours and 15 minutes, an average speed of 19.52 knots.

The four-masted schooner Miles F. Merry, which stranded off the Long Island coast on Feb. 17, and which had since been stripped and abandoned, was burned to a frame in some unknown manner on Monday.

The Great Lakes Dredge & Dock Co. was the lowest bidder for dredging and widening the Cuyahoga river above the Jefferson street bridge, Cleveland. About $50,000 is involved. The bids ranged from 15¾ cents to 19 cents a cubic yard, according to the nature of the work.

CLARK WIRELESS SYSTEM.

The Clark Wireless Telegraph Co. has installed a complete wireless telegraph plant in the editorial offices of the Detroit *Journal*. The company has also closed contract for equipping all the vessels of the Detroit & Cleveland Navigation Co.'s fleet. The equipment is now being put aboard the Eastern States, City of St. Ignace and City of Mackinac. The steamers City of Cleveland, City of Detroit and Western States are already equipped.



CLARK WIRELESS TELEGRAPH SET.

Domestic Commerce on the Great Lakes.*

The volume of lake traffic during the season of 1908 as measured by domestic shipments of merchandise from various lake ports was 60,518,024 net tons, compared with 83,506,991 net tons and 75,609,648 net tons shipped during the 1907 and 1906 seasons. The considerable decrease noted in the 1908 total was due mainly to the smaller shipments of iron ore, though the shipments of all other items except hard coal and salt also show smaller totals than a year ago.

The iron-ore shipments by lake during the year, exclusive of 239,426 gross tons exported to Canada, as reported to the bureau, totaled 24,939,185 gross tons, compared with 40,727,972 gross tons reported for the 1907 season. The largest shipping ports in the order of their importance were Duluth, credited with 8,761,304 gross tons; Two Harbors, 5,558,028 gross tons; Superior-West Superior, 3,463,774 gross tons; Escanaba, 3,208,866 gross tons; Ashland, 2,474,167 gross tons; Marquette, 784,212 gross tons; Presque Isle, 681,105 gross tons. The greater part of this ore, namely, 20,444,751 gross tons, was received at the Lake Erie ports of Ashtabula, Cleveland, Buffalo, North Tonawanda, Lorain, Fairport, Erie, Toledo, Huron, and Sandusky. The rest is credited mainly to Chicago, Indiana Harbor, Gary, Milwaukee, and Detroit. About a million gross tons of ore is credited to the two new receiving points of Indiana Harbor and Gary, thus placing Chicago and vicinity on practically the same level with Cleveland as an ore-receiving center.

As compared with the dock managers' figures of season shipments, published by the MARINE REVIEW, 25,427,094 gross tons, the bureau figures disclose a shortage of about half a million tons. The reasons for this difference would seem to be twofold. First. Exports to Canada which figure as part of the total shipments in the MARINE REVIEW returns do not enter the bureau total as shown above. Second. The bureau returns coming as they do from receiving ports credit the shipping ports with the same quantity of iron ore that is unloaded at the receiving port or ports. As a matter of fact, the weight of the ore cargo when placed aboard the vessel is in all cases higher than the weight of the same cargo when determined at the port of discharge, as a certain amount of moisture included in the original weight has then evaporated. The MARINE REVIEW figures received from the dock managers at shipping ports apparently state the original weight of the cargo including moisture. That this accounts for part of the difference between the bureau figures and the trade figures can be seen from the fact that the difference in the iron-ore receipts at Lake Erie ports is much smaller relatively than the difference between the figures of shipments, the total receipts at these ports as reported to this office being 20,444,751 long tons, while the figures published by the MARINE REVIEW are 20,414,491 tons.

Domestic grain shipments by lake during the past season aggregated 111,213,910 bu., of which 57,754,183 bu. constituted wheat; 22,546,795 bu. corn; 15,701,406 bu. oats; 13,516,156 bu. barley, and 1,695,370 bu. rye. The total 1908 grain movement by lake shows a 22.8 per cent decrease from the 1907 total. The largest relative loss of almost 50 per cent is shown in the shipments of corn. The lake movement of oats declined about 24 per cent, while shipments of other grains likewise show perceptible decreases as compared with 1907 totals. Of the total domestic lake shipments of wheat during the year 1908 about three-quarters are credited to Duluth-Superior, and the total shipments for the year from those two ports, about 43½ million bushels, presents but a small decline from the 1907 total. Milwaukee increased its shipments from 2,883,116 bu. in 1907 to 4,187,973 bu. for the 1908 season. The decline in the total is due entirely to the large loss in domestic shipments from Chicago from 14,448,231 bu. in 1907 to 8,865,197 bu. in 1908. About 88 per cent of the wheat receipts is credited to the port of Buffalo, while the only other ports showing receipts in excess of one million bu. for the year were Chicago, Detroit, and Erie.

About 21.4 million bushels of corn, or about 95 per cent of the total domestic shipments for the year proceeded from Chicago; Milwaukee being the only other port which shipped a quantity in excess of one million bushels. The principal ports of destination of these shipments were Buffalo, which is credited with over 70 per cent of the entire domestic lake receipts of this article, and Ogdensburg, which received about 3.4 million bushels or 18 per cent of the total domestic lake receipts of corn for the year. The bulk of domestic lake shipments of oats was more evenly distributed among the ports of Milwaukee, Chicago, Manitowoc, Duluth, and Superior; the 1908 figures being in all cases below those for 1907. The main receiving ports for this article, just as in 1907, appear to have been Buffalo, Ludington, Grand Haven, and Cleveland. Duluth, Superior, and Milwaukee led in the domestic shipments of barley, which were directed mainly to Buffalo. The comparatively unimportant domestic shipments of rye proceeded chiefly from Duluth, Kewaunee, Superior, and Milwaukee, and were destined in main part to Buffalo and Ludington. The domestic shipments of flaxseed for the year, 15,610,219 bu. differ but slightly from those for the preceding seeason, 15,647,509 bu., and proceeded mainly from Duluth-Superior; the principal port of destination was Buffalo, which partook of over 84 per cent of the total domestic receipts of the article. Smaller receipts are credited to Cleveland, Toledo, and Chicago. The 1908 shipments of flour, 1,188,831 net tons of 10 barrels each, likewise present a smaller total than for the preceding year; shipments proceeded mainly from Chicago, Milwaukee, and Duluth-Superior while Manitowoc, Buffalo, Erie, Fairport, Grand Haven, and Ludington were the main receiving ports in the order of importance. Almost two-thirds of the entire domestic lake receipts of flour is claimed by Buffalo.

The annual lumber shipments, 944,742,000 ft., were 32 per cent below the total reported for the year 1907. This decrease was due probably not so much to the general business depression as to the gradual exhaustion of the lumber supply in the territory bordering on the lakes. It seems probable that with the further depletion of the pine forests contiguous to the lakes and rivers flowing into the lakes the importance of the cheaper water route will grow less and less, and that railroads will find it correspondingly easier to compete successfully with the lake carriers for the transportation of lumber in the lake region. The movement of pig iron and iron manufactures during the year reflected the prevailing industrial depression, the respective aggregates, 90,407 gross tons of pig iron and 325,207 net tons of iron manufactures, falling far below like totals for the preceding pear. The season shipments of salt, 619,788 net tons, and those of copper, 135,693 net tons, were in excess of corresponding totals for the 1907 season.

The shipments of hard coal, chiefly from Buffalo, Oswego, and Erie, 4,189,-

*Compiled by the Bureau of Statistics, Washington, D. C.

672 net tons, were in excess of the 1907 figures: Over three-fourths of these shipments were consigned to Chicago, Milwaukee, and Duluth-Superior. The shipments of soft coal, being chiefly for industrial purposes, present a less favorable showing for the year, the total for 1908, 13,204,009 net tons, being considerably below the 1907 total of 15,428,309 net tons. This coal proceeding from Lake Erie ports comes into competition with the soft coal mined in the central western states carried by rail to consuming points. One advantage the lake-borne coal has over the coal carried by rail is the low freight rates charged on western shipments of this article by returning ore and grain-carrying vessels. The 1908 rates varied between 30 and 40 cents per net ton and differed but little from the 1907 rates as distinct from grain rates which were decidedly lower than during the 1907 season. The above total for soft coal shipped does not include the quantity of fuel or bunker coal supplied to vessels for their own use. This quantity aggregated 1,477,902 net tons, compared with 2,017,231 net tons reported for the year 1907. The total just given comprises quantities taken by vessels engaged in domestic trade proper, and is exclusive of bunker coal supplied to vessels in the foreign trade, to tugs and other harbor vessels. The total quantity of fuel coal supplied to all classes of vessels at United States lake ports during the 1908 season appears on page 619 of this summary.

The shipments of unclassed freight, including mainly what is known as package freight, 6,467,279 net tons, were about half a million tons below the total of the 1907 season. Buffalo, Chicago, and Milwaukee were the principal shipping and receiving ports of miscellaneous merchandise.

The total domestic receipts by lake during the year 1908 aggregated 58,909,345 net tons. About 73 per cent of the total merchandise tonnage received is credited to twelve ports. For the year 1908 the largest tonnage received is shown by Chicago, closely followed by Buffalo, which held first rank as a receiving port during the year 1907. The shipments appear to be less concentrated, the 12 ports in question shipping less than 59 per cent of the total tonnage. Notwithstanding the considerable decrease in ore shipments for the past season Duluth shows by far the largest tonnage of domestic lake shipments, followed at some distance by Superior-West Superior and Buffalo. It should be noted that the figures just given comprise only domestic shipments. The aggregate weight of exported goods is not reported to this office, and if combined with the figures just given may alter somewhat the rank of various ports for which the data of merchandise tonnage are presented.

The vessel movement on the great lakes during the year in question also shows a considerable decrease compared with 1907 figures. The total departures in the domestic trade numbered 65,624 vessels of 83,378,323 net tons, compared with 73,769 vessels of 99,166,409 net tons reported for the calendar year 1907. The largest vessel tonnage cleared in the domestic trade is shown for Duluth, Milwaukee, Chicago, Buffalo, Superior, Cleveland, Two Harbors, Ludington, Detroit, Conneaut, Ashtabula, and Toledo, in the order of their importance, showing a tonnage of departing vessels in excess of 2,000,000 tons. The average size of the vessels on the great lakes was 1,271 tons, compared with 925 tons for the year 1902 and 1,100 tons for the year 1905.

The freight movement through the canals at Sault Ste. Marie, Mich., and Ontario, Canada, during the 1908 season, 41,390,557 net tons, shows a relative decrease of about 29 per cent, or about the same as the decrease for the 1908 domestic lake shipments. The greatest loss appears under the head of iron ore. The quantities of eastbound iron ore locked through the canals during the year, 24,627,588 net tons, differ somewhat from the Lake Superior ore shipments reported to this office, for the reason that the bureau does not take account of the Canadian, mainly Michipicoten ore shipments, nor of ore exports to Canada. There is a considerable difference between the volume of the eastbound grain movement reported by the canal authorities and that of the grain shipments from Lake Superior ports reported to this office, as the grain shipments during the year from the Canadian Lake Superior ports were almost as large as those from the United States ports, while the shipments of wheat alone from Port Arthur and Fort William mainly were larger than those from American ports on Lake Superior. From reports especially prepared for the use of this office by both the United States and Canadian Canal authorities it appears that during the past season 53,184,970 bu. of Canadian wheat and 14,609,844 bu. of other Canadian grain, including flaxseed, passed through the canals.

About 90 per cent of the westbound freight tonnage passing through the canals was made up of coal. The totals for the calendar year 1908, 1,384,743 net tons of hard coal and 8,517,717 net tons of soft coal, show a decline from the 1907 figures of 1,506,668 net tons of hard coal and 9,893,427 net tons of soft coal. These figures are considerably higher than the respective figures of domestic receipts at Lake Superior ports, since the canal figures include the westbound exports by lake of American coal from the lower lake ports to Canadian ports on Lake Superior. In agreement with the smaller movement of freight through the canals, the number and tonnage of vessels reported by the canal authorities shows a decrease from 20,437 vessels of 44,087,974 net tons for the 1907 season to 15,181 vessels of 31,091,730 net tons register for the season just passed. The average size of vessel using the canals, 2,048 tons, while considerably higher than the average obtained from the reports of this office, 1,271 net tons register, was, however, below the like average for the preceding year. This decrease is due to the smaller number of passages made by the larger sized ore boats during the past season. As a matter of fact, many of these boats began their regular movements only during the middle of the summer, while in 1907 the movement started as soon as the ice had cleared from the approaches to the canals.

A similar decrease is shown in the case of the freight and vessel movement for the Detroit river. The merchandise traffic through this river for the past season aggregated 46,946,884 net tons, compared with 67,292,504 net tons reported for the 1907 season. A 30 per cent decrease of the river movement for the year corresponds to a 29 per cent decrease of the canal movement and a 28 per cent decrease of the total lake shipments. Of the total, 29,260,914 net tons represented a southbound and 17,685,970 net tons a northbound movement. As compared with the preceding year's totals, the southbound movement, comprising the ore traffic, shows by far the larger relative decrease. The vessel movement through the river for the year comprised 18,212 vessels of 36,290,089 net tons, compared with 23,721 vessels of 48,958,238 net tons for the 1907 season.

Reports from San Francisco indicate that a private syndicate are contemplating establishing a floating dry dock there. The dock at Hunter's Point, formerly owned by the San Francisco Dry Dock Co., has been acquired by Charles M. Schwab, who also owns the Union Iron Works.

The keel of the new battleship Florida which is to be built by the government at the New York navy yard was laid this week. The Florida will be about 520 ft. long and of 21,825 tons displacement.

Modern Methods of Lake Navigation for the Beginner.

BY CAPT. GEORGE TRIMBLE.

There are many valuable pointers about taking bearings of the sun, moon and stars that can be learned by practice only, but the following hints may be useful:

The nearer the heavenly body is to abeam the better job you can make of it.

Don't take a bearing if the object is higher up than 60 degrees. Remember that it is 90 degrees from the horizon to the zenith. The zenith is the point that is directly over your head.

Therefore don't take bearings of the sun between 10 a. m. and 2 p. m. unless it is not possible for you to get them at any other time.

You might be told that refraction and dip of the horizon make heavenly bodies appear in a different place than they really are. Don't bother your head about these puzzlers unless you are intending to be an ocean navigator. You might learn all these things as a side line after you have mastered that which is really necessary, but you had better forget many of the puzzling terms that you read of in navigation books and first spend your time making yourself an expert lake navigator. If we filled our heads with such things as amplitudes, co-latitudes and polar-distances we would be very apt to shy at the whole study. These things can be looked into later on if we wish. The last chapter of this book is devoted to definitions of all such things.

We are also told that the moon should not be used for azimuth work—they say it is too close and its parallax is too great. We are told that it moves too fast through the heavens. It is only 238,000 miles from the earth—that's all. The best lake navigators use the moon. But our books on navigation mean all right—but they are addressed to ocean navigators. The moon is not reliable for finding the position of a ship on the ocean. Lake navigators often take bearings (or azimuths) of objects that are only a few miles away. A friend of mine—Captain W. E. Clarke, an excellent lake navigator—taught me to find the error of my compass from the reflection of the lights at the Lorain furnace. This is often seen at Southeast shoal. When directly abreast the lightship the azimuth is 149E. Swing your ship on the course you wish to take before you get to the lightship and take your bearing when exactly abreast. Do it quickly as the angle soon changes.

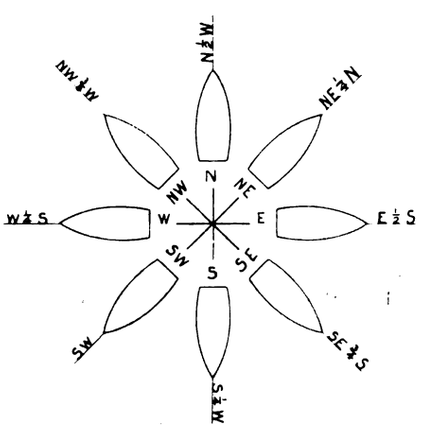


FIG. 27.

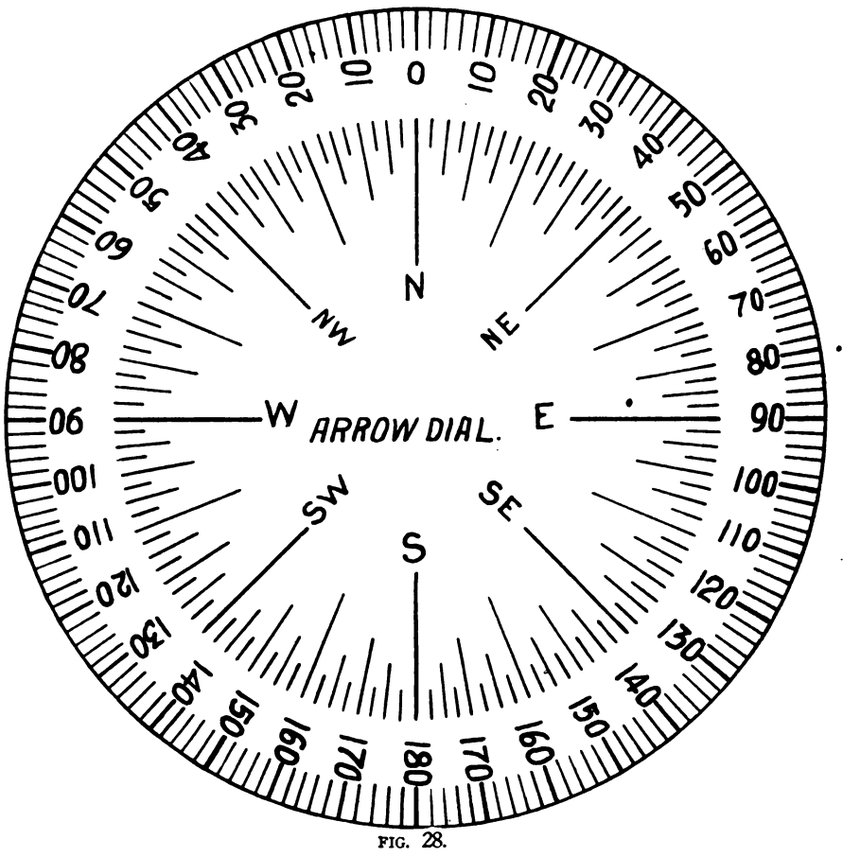


FIG. 28.

Swinging Ship for Deviation.

One of the things that a careful lake navigator does is to frequently swing his ship for deviation. This is especially valuable when you first leave the dock in the spring. For example, we will say that we have just left Milwaukee with a steamer that has lain at the dock all winter. No figuring need be done until after you have taken all the bearings and have shaped your course down the lake. We first swing our ship to north and steady her there. Make our pelorous read the same and then take a bearing of the sun, moon or a star and note the time. Swing your ship slowly on a port wheel and stop her on each inter-cardinal point as shown in the above cut. Take a bearing and the time at each stop and mark it down. When you have completed the whole circle shape your course down the lake and figure your deviation out at your leisure. The whole operation will take but a few minutes and shows you the deviation of your compass on every heading. By using the pelorous slate there is not the least chance for mistake in your problems and you can be just as certain of the result as if you

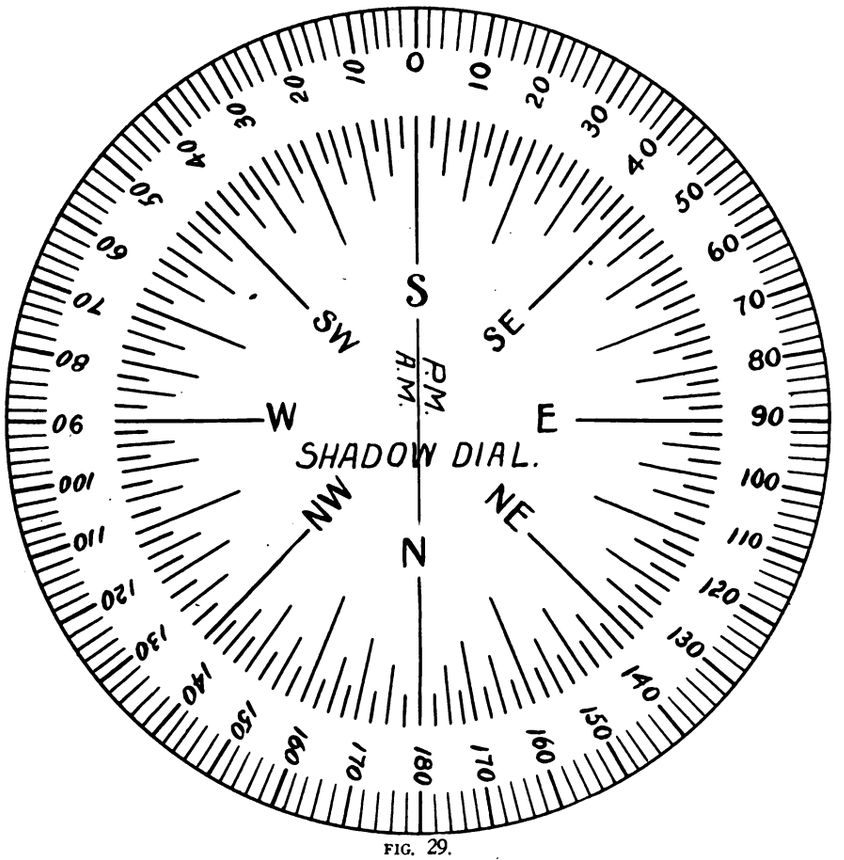


FIG. 29.

had swung your ship on ranges. By referring to Fig. 27 you will see that our ship headed north half west when she should have headed northeast, she should have headed north, northeast quarter north, when she should have headed northeast, etc.

How to Make a Practice Pelorus.

A simple little instrument can be made with very little trouble that will do for all practice work. As it would be somewhat difficult for you to make a perfect dial we give here a cut of an arrow dial, Fig. 28, and also a cut of a shadow dial, Fig. 29. Cut these out and paste one on each side of a piece of cardboard that is cut the same size. This will make you a reversible dial. If you wish to use the shadow pin you will simply have to turn the side marked "Shadow Dial" uppermost. If you want to use the arrow dial then use the other side of the card.

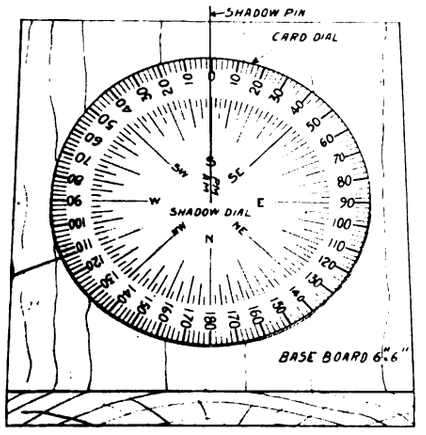


FIG. 30.

You will now need a piece of inch board for a base. See Fig. 30. Cut this a little larger than the dial but make it square instead of round. Six inches square would be a good size. If you are going to use the shadow dial then very little remains to complete your instrument. Lay your carboard dial on the baseboard and stand a knitting needle upright in the middle, driving it through the cardboard dial and into the base at least half an inch. The dial will now turn on the base in any direction. Choose one side of your base for the forward side and mark a lubber-line directly in the middle. This will represent your ship's head. This now completes your shadow pelorous. With this kind of a pelorous you must get the azimuth from the book before you take a bearing. Then find the azimuth on your dial and swing the dial around until this azimuth is at the mark that shows your ship's head. The sun will then cause the needle to throw a shadow on the magnetic course the ship is steering. Remember that the azimuth you get from the book is a "true" azimuth. You must find the variation of the locality you are in and apply it to this true azimuth before you put it at the ship's head.

If you wish to use your pelorous as an arrow dial you will need a sight vane in place of the knitting needle. You must also reverse your cardboard dial—using the side marked "Arrow Dial." A sight vane need be a very simple affair. A piece of wood can be cut about the size and shape of a lead pencil. Stand this in the center of your card in the place of the knitting needle. You can bore a hole through your card and into the base if you wish, but a better way would be to put a short piece of knitting needle into the bottom of your stick and then insert it in the same hole your shadow pin made. If you made a hole in the baseboard large enought to insert the stick you would spoil your baseboard and your card as a shadow instrument.

You will now need a sight vane at the top of the stick and a pointer near the bottom. See Fig. 31. Bore a small hole near the bottom of the stick and insert a knitting needle. Have this piece of needle just long enough so that it will come to the row of figures on each side of the

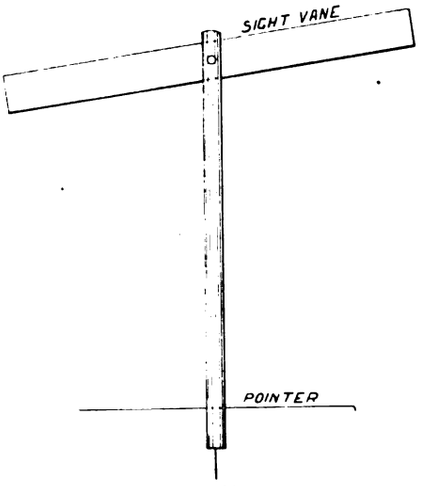


FIG. 31.

card. This will be your pointer. Now cut a slit in the top of your stick (like the slit in a clothes pin, only shorter) and swing a flat piece of stick in this slit for a pointer. Fasten it there with a short screw or nail. This completes your pelorous. Now try it. Set it near your compass and square it up, fore and aft, with the

lubber line of your pelorous heading the same way as the compass. Note the course as shown by your compass and set your pelorous card to head the same way. Now point the sight vane at the sun. The pointer below will show you the azimuth, as shown by the compass. By looking in the azimuth book you will find the correct azimuth and can then tell just what is the error of your compass. Then swing your boat until your pelorous would show a bearing the same as the book.

For night azimuth work we must be able to pick out a few good stars and we must also understand how to change our standard time into sidereal time. Astronomers give us the positions of the heavenly bodies in the Nautical Almanac but as their calculations are all made by sidereal time we must use sidereal time in order to enter the Nautical Almanac at the right place. We use the same books and instruments that we did for bearings of the sun but we need a copy of the Nautical Almanac. This can be purchased from the Penton Publishing Company, Cleveland, Ohio. The price is 50 cents. The Nautical Almanac gives us the necessary elements for changing standard time into sidereal time and also gives us the positions of all the heavenly bodies for any instant of time for the whole year. In buying a Nautical Almanac be sure that you get one for the current year. A 1908 almanac would not do for 1909.

The first part of this chapter will be devoted to the study of the stars. You will find this part of the study much more easy than you may think. Written in as simple a manner as is possible you will find here the following subjects:

The first lessons in astronomy.

What we see in the heavens.

How they move.

Difference between planets and stars.

How astronomers locate heavenly bodies.

How to pick out one dozen bright stars for azimuth work.

The times of rising and setting of these stars each night.

The second part of this chapter will explain all about sidereal time and the other work necessary for night azimuth work, as follows:

Why we must use sidereal time for night azimuth work.

What sidereal time is.

What a sidereal clock is set by.

A pelorus slate for night work.

How navigators and astronomers read time.

How to read a Nautical Almanac.

Practice problems.

We can't take azimuths of stars in all parts of the heavens. Most azimuth tables give us azimuths for only that part of the heavens that the sun travels through. Therefore we can use only those stars that happen to be in that belt. The sun works back and forth 23 degrees on each side of the equator. Therefore the Red Book gives azimuths for a belt in the heavens 46 degrees wide. However the new Henrich tables take in a belt of 29 degrees on each side of the celestial equator and enables us to use several good stars that we can't use with the red book.

A Few Lessons in Astronomy.

Before we start our star-gazing we should go back and review a few of the simple lessons in astronomy that we were taught at school. Many of us have forgotten some of the things that we should now know in order to make our work easy.

What do we see in the heavens with the naked eye? The sun, the moon, planets, and stars, with an occasional shooting star and comet. With a telescope we can see asteroids and satellites.

What they are:

The Sun—An immense ball of fire.

The Stars—Other immense balls of fire, many of them being hundreds of times larger than the sun but millions of times farther away.

The Planets—Immense globes having no light of their own. The earth is a planet. Light from the sun shines on them and makes them appear like stars.

The Moon—A satellite; most of the planets have moons revolving around them. These moons are called the planet's children or satellites. The moon is the earth's satellite and is the only satellite visible with the naked eye. The moon has no light of its own but gets its light from the sun.

Asteroids—Small planets, none of which can be seen with the naked eye.

Shooting Stars—Pieces of fiery metal that seem to be hurled at us from the heavens. Astronomers tell us that countless numbers of these things are continually racing through space at a great speed. Some of them rush into the band of air that surrounds the earth and are immediately heated into a fiery ball. The great heat causes some of them to explode like rockets before they reach the earth, while others have been known to bury themselves in the earth. Where they come from no one can tell.

Comet—A heavenly body that appears to us like an immense burning planet rushing through space and leaving a trail of fire behind it. But the substance of a comet is not known. And the tail of a comet does not always trail behind but sometimes goes ahead of the comet and is then called the comet's whiskers. Another peculiarity of the comet is the fact that when it passes in front of a star it does not hide the star—the star shows through it just as brilliantly as though the comet was not there. Comets are seldom seen.

Now when we look at the heavens at night we see stars and planets. Only four planets can be seen with the naked eye—Venus, Mars, Jupiter and Saturn. Saturn and Mars might easily be mistaken for bright first-magnitude stars. Venus and Jupiter are generally too bright and big to be taken for stars.

Our Solar System.

The solar system is simply the sun and his family of planets, satellites, etc.

The sun is the center and the earth and the other planets and all the rest of his followers join in the mad race around him. The solar system is a great whirling mass of bodies and covers a space about 6,000 million miles in diameter. And the sun is the only one of the bunch that has any light of its own. Imagine a great dark room in the middle of which is a ball of fire. Around this ball of fire you see dark bodies, moving swiftly and in perfect time. Other smaller dark bodies circle around the larger dark bodies. This is a picture of the solar system. The larger dark bodies are the planets; the small ones are the planet's moons. There are no stars in the solar system, they are only specks in the distance.

Each star you see is another sun and probably has a family of his own. But the distance to the nearest star is so great that but very little can be learned about them.

A few of these dark planets shine in the sky like bright stars and we are apt to think they are stars. This is why we should know just what is in the heavens. The sun shines on some of these planets and makes them look like stars.

Make a little model of your own and see if it will not impress on your memory just how the heavenly bodies move.

Set a lamp in the center of a table.

Have the table in the center of the room. The lamp will represent the sun. The walls of the room will represent the sky. Spots on the walls can be used to represent the stars. We will now get eight dark balls to represent the planets—dark bodies having no light of their own. Place these balls in a row on the table as shown in Fig. 32. Each ball will represent a planet. The earth is the third planet from the sun. Now if you could cause these balls to move about the lamp you will have an idea as to how the bodies of our solar system move. To make your model complete you should have some small balls to represent the moons or satellites. These moons keep circling around their planets, while the planets are rushing around the sun. Mercury and Venus have no moons, the earth has one, Mars has two, Jupiter has five, Saturn has eight, Uranus has four, and Neptune has one. The earth's moon is the only satellite that can be seen with the naked eye.

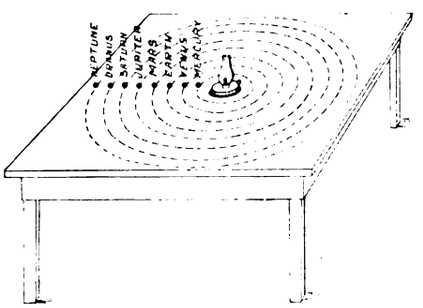


FIG. 32.

The planets that we see at night and that resemble stars are Venus, Mars, Jupiter and Saturn. Mercury is too close to the sun to be seen with the naked eye and Neptune and Uranus are too far away.

By looking at your model you will see that the third planet from the sun

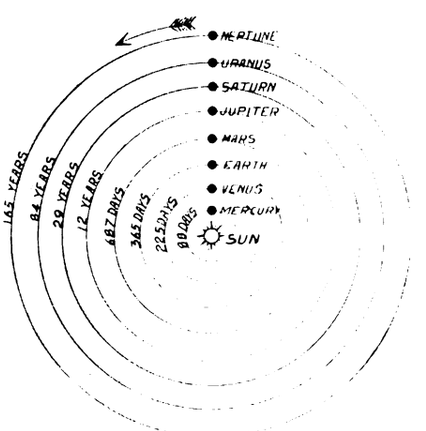


FIG. 33.

is our earth. It whirls on its axis once every 24 hours and also rushes around the sun, making the complete revolution in 365 days. This yearly movement is the reason for us not being able to see the same stars all the year around. Roll the ball around the lamp and follow it around. You can see that the side that is turned away from the lamp is the dark side. If you were standing on the dark side of the earth it would be night there and you could see the stars with the naked eye. When you were turned toward the sun daylight would come and the stars would not be visible. So the dark side of the ball will face a certain side of the room and then gradually work around until it faces the other side of the room. It leaves

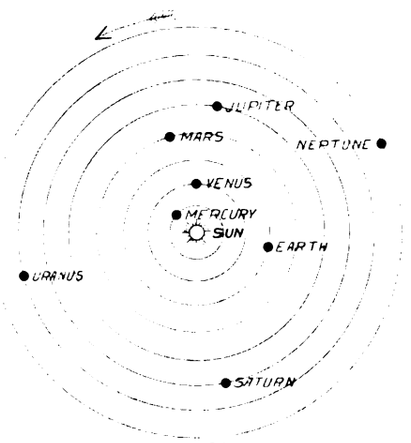


FIG. 34.

behind the stars on one side and comes back to them again after it makes the complete revolution around the sun. A star rises four minutes earlier each night until its rising time is after daylight and it can't be seen on account of the great light of the sun.

The movements of the planets and the length of time each takes to get around the sun is shown in Fig. 33. Of course they don't all stay in line as shown in this cut. Fig. 34 shows how they appeared about Dec. 15, 1908.

Liverpool shipping circles have been interested in a rumor to the effect that if the White Star line enters the Canadian trade under its own flag the Allan line will retire from the North Atlantic conference, an exceedingly ominous outlook, as it is only the conference's cast iron rules and regulations that safeguard against hostilities among its members. A rupture in its ranks would clearly involve a very serious situation being almost certain to bring about another rate war with all its attendant results.

IMPROVING SABINE-NECHES CANAL.

Beaumont, Texas, March 15.—Advocates of waterway improvement and shippers throughout the country are manifesting an interest in the projected improvement of the Sabine-Neches canal and the Sabine and Neches rivers so as to enable ocean-going vessels to ply direct to Orange and Beaumont, which offers substantial evidence of the pluck and progressiveness of the people. For several years the possibilities of making Orange and Beaumont important inland ports have been considered by some of the foremost and far-sighted citizens. As result of an effort in this direction an appropriation was secured to dig a canal along the west side of Sabine Lake and connecting the mouths of the Sabine and Neches rivers with the Gulf. This canal is less than 100 ft. wide and about 10 ft. deep, permitting only light draught vessels to pass through, but it has proved sufficient to suggest great possibilities for the opening of another artery of commerce and the development of the many and varied resources of this section. Fresh water ports are always attractive to the ship owners and there is every reason to believe that with the deepening of the canal and the further improvements of the rivers, these ports will do a vast shipping business.

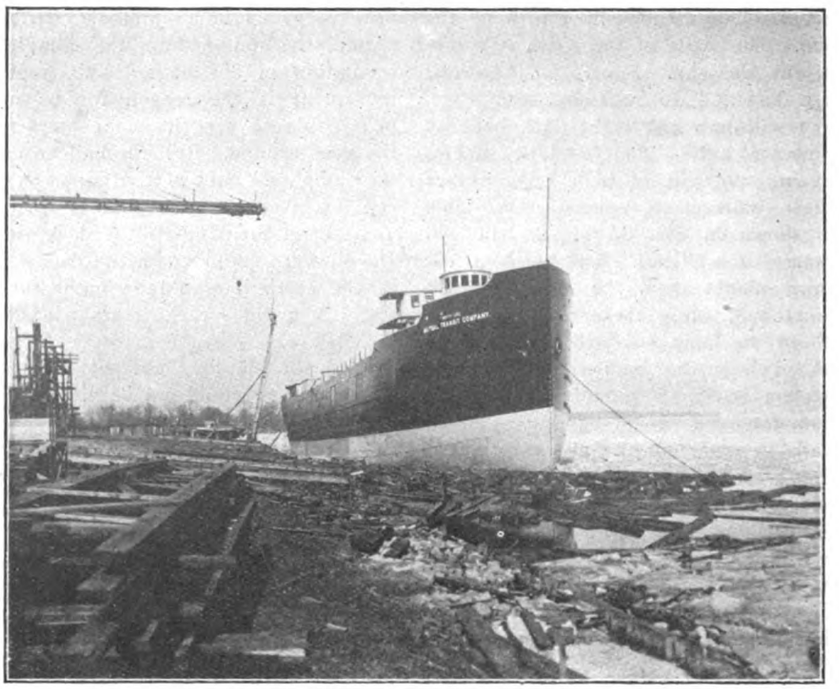
The matter was presented to congress and further aid was sought, but on account of the general tendency to retrench, it was found that sufficient funds could not be secured by appropriation to do the work necessary. When this condition became known and realizing that delay until such time as government appropriation could be had would be the loss of so much valuable time for development, it was suggested that the people provide the funds for the improvements immediately necessary and plans to this end were quickly formulated. A bill conveying the constitutional right to levy special taxes and issue bonds for such improvement was presented to the Texas legislature and was soon passed and has now received the signature of the governor. Simultaneously a bill was presented in the national congress and the necessary government permit to make such improvement has been granted. The proposition will soon be submitted to a vote of the people of Jefferson county and it is expected that the issuance of bonds will be promptly authorized. It is estimated that $400,000 will be sufficient to deepen the canal to 25 ft. and to improve the rivers materially.

PACKET FREIGHTER NORTH LAKE LAUNCHED.

The package freighter North Lake, building for the Mutual Transit Co. of Buffalo, was launched at the St. Clair yard of the Great Lakes Engineering Works on Saturday last and was christened by Miss Katherine L. Noble, the daughter of the assistant manager of the steamship company. The launching party were taken from Detroit to St. Clair in a special car by Mr. Antonio C. Pessano, president and general manager of the Great Lakes Engineering Works. The character of the launching party was somewhat unusual as all the general agents of the Mutual Transit Co. throughout the country from New York to Seattle, including the officers at Buffalo, were present. The launching party included W. E. Lloyd, superintendent, and H.

MISS KATHERINE NOBLE, SPONSOR.

S. Noble, of Buffalo, assistant manager of the Mutual Transit Line; W. E. Chandler, general freight agent, Buffalo; L. W. Lake, general eastern agent, New York; W. K. Young, general agent, Pittsburg; W. B. Riddle, general agent, Buffalo; J. A. Stevenson, general agent, Buffalo; D. R. Peck, general agent, Cleveland; F. W. Winship, general agent, Duluth; Frank Fairchild, general agent, Minneapolis; C. B. Baker, general agent, St. Paul; M. J. Seabrook, general agent, Seattle, Wash.; P. L. Stuart, New England agent, Boston; P. H. Diver, traveling freight agent, Philadelphia; W. H. Zeliff, contracting agent, New York; C. W. Robinson, traveling freight agent, Minneapolis; C. A. Gould, contracting agent, St. Paul; T. M. Lippert, agent, Cleveland; John Stevenson, agent, Detroit; George E. Ross, agent, Hancock; George Holme, assistant superintendent, Buffalo; A. McQuilkin, Buffalo; Robert Main, Pittsburg; F. G. Rogers, marine superintendent, Lehigh Valley Transportation Co., Buffalo; Miss Katherine L. Noble, sponsor; Mrs. H. S. Noble, Buffalo; Mrs. D. D. Wessel, Miss Frances Skinner, Detroit; Capt. C. H. Westcott, John R. Russel, Antonio C. Pessano.



THE NORTH LAKE IMMEDIATELY AFTER LAUNCHING.

Returning from the yard, luncheon

AS A LAUNCHING PARTY THE PHOTOGRAPH IS DISTINGUISHED IN THAT THERE ARE NO WOMEN PRESENT.

Top row, reading from left to right, W. K. Young, Pittsburg; L. W. Lake, New York; Ald. L. C. Ellis, Detroit; P. H. Diver, Philadelphia; P. L. Stewart, Boston; A. McQuilken, Buffalo, N. Y.; D. R. Peck, Cleveland, O.; Frank Fairchild, Minneapolis.

Lower row, F. W. Winship, Duluth; Geo. E. Ross, Hancock, Mich.; M. J. Seabrook, Seattle, Wash.; W. B. Riddle, Buffalo, N. Y.; C. P. Baker, St. Paul; W. E. Lloyd, Buffalo; W. H. Zeileff, New York; Mr. Evans, P. D. Chandler, Buffalo, N. Y.; M. Lipper, Cleveland, O.; H. S. Noble, Buffalo, N. Y.; Geo. Holme, Buffalo, N. Y.; J. A. Stevens, Detroit; Capt. Stevens, Detroit; C. W. Robinson, Minneapolis; F. G. Rogers, Buffalo, and C. A. Gould, St. Paul.

was served in the special car Yolande and a complimentary dinner was tendered by the ship building company to the out-of-town guests at the Hotel Pontchartrain in the evening.

The North Lake is 372 ft. over all, 350 ft. keel, 46 ft. beam and 30 ft. deep. She has ten hatches, spaced 24-ft. centers. Her engines are quadruple expansion with cylinders 19, 27½, 40 and 58 in. diameters by 42-in. stroke, supplied with steam from boiler 11 ft. 6 in. by 11 ft. 6 in., fitted with forced draft and allowed 210 lbs. pressure. Her carrying capacity is 5,000 gross tons.

CONTRACTS FOR THREE FREIGHTERS.

President J. C. Wallace of the American Ship Building Co. closed contract last week for three bulk freighters to be 524 ft. over all, 504 ft. keel, 54 ft. beam and 30 ft. deep. The liveliest possible interest was manifested in these orders by vessel owners, but no information was vouchsafed as to who placed the contracts. It is hinted, however, that one of the orders was given by Capt. J. J. H. Brown of Buffalo.

It is reported from Montreal that the Richelieu & Ontario Navigation Co., Montreal, has given contract to the American Ship Building Co. for a steamer of Canadian canal size, to trade between Toronto and Montreal.

This makes 14 orders that the American Ship Building Co. has booked for 1909 delivery, 10 of them being bulk freighters.

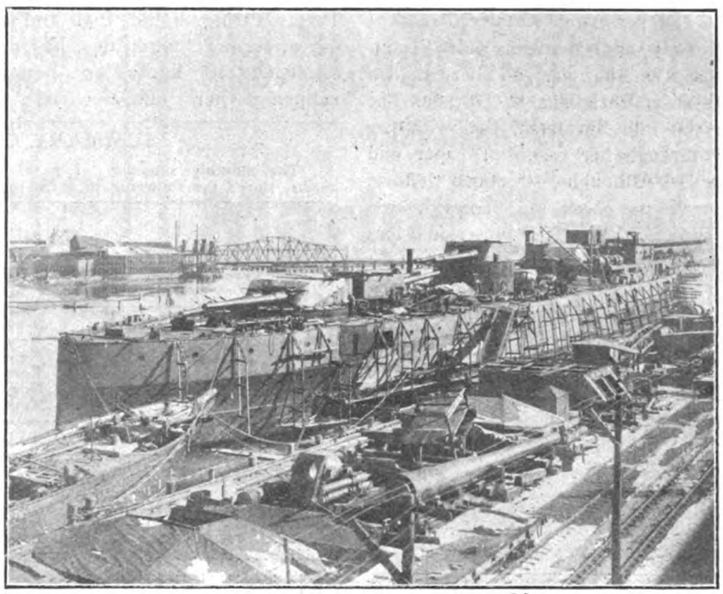
OBITUARY.

Capt. Calvin Becker, veteran vessel master, died at Watertown, N. Y., recently. He was an uncle of Mr. W. H. Becker of Cleveland.

Rear Admiral James Gilchrist Green, U. S. N., retired, died at Edenton, N. C., Feb. 16. Rear Admiral Green was born at Jamaica Plain, Mass., on June 27, 1841. He entered the navy as acting ensign in the volunteer service at the outbreak of the civil war, throughout which he served, afterward being transferred to the regular service. He was retired at his own request after forty years of active service, with the rank of rear admiral.

BATTLESHIP NORTH DAKOTA.

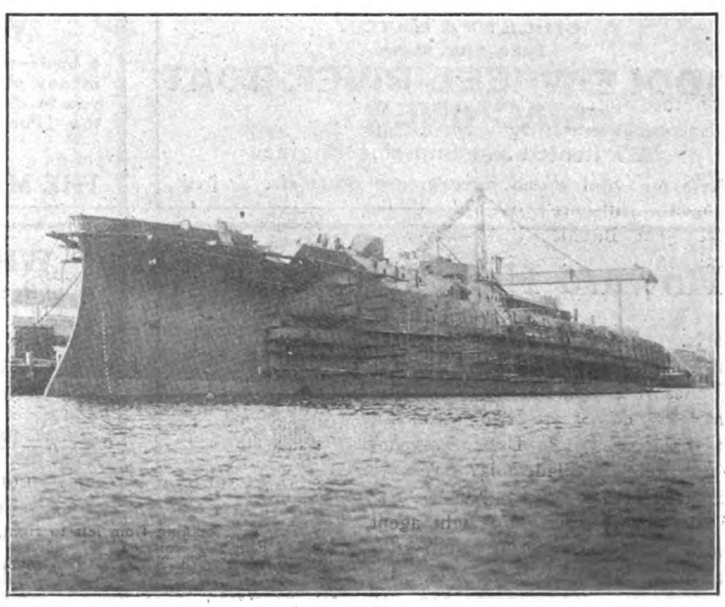
Photographs are herewith published of the battleship North Dakota building at the yard of the Fore River Shipbuilding Co., Quincy, Mass., showing her 74.5 per cent completed. The photographs were taken on March 1. The construction gain during the month was 3.9 per cent. The mounting of No. 2 turret has been delayed by the non-delivery of armor. Shipment of the port belt and No. 2 barbette armor is promised for this month. The turbines are nearly completed and will be installed probably within the next 30 days. It is now expected that the trials of the ship will take place in the coming fall.



PHOTOGRAPH OF BATTLESHIP NORTH DAKOTA, TAKEN ON MARCH 1, SHOWING HER 74.5 PER CENT COMPLETED.

Capt. Henry Peterson will bring out the new steamer Shenango, now under construction at the Ecorse yard of the Great Lakes Engineering Works. Capt. Peterson has brought out all the new steamers for the Snyder interests.

It is reported from San Francisco that Bernard N. Baker, formerly president of the Atlantic Transport Co., and at present president of the Baltimore Trust & Guaranty Co., is contemplating the formation of a company to operate steamers between San Francisco and New York via Panama.



PHOTOGRAPH OF BATTLESHIP NORTH DAKOTA, TAKEN ON MARCH 1, SHOWING HER 74.5 PER CENT COMPLETED.

A costly fire occurred on the new freight and passenger steamer Texas of the Norway and Mexican Gulf Steamship Co., as she was on her maiden voyage from Christiana to Havana. The Texas put into Savannah, Ga., with fire eating through her cargo of paper and carbides. Although strenuous efforts were made to check the flames it was only accomplished after a serious loss and considerable damage to the vessel.

The Temagami Navigation & Hotel Co., Ltd., has given an order to the Toronto Ship Yards, Toronto, for a small passenger boat for Lake Temagami, to be 75 ft. long, 12 ft. beam and 7 ft. deep. She is to be equipped with a triple-expansion engine, supplied with steam from a Mosher water-tube boiler, and is to be ready for the coming season's business.

The British torpedo boat destroyer Tartar, using liquid fuel and steaming under war conditions, has recently exceeded 38 knots an hour, thus eclipsing her official trial record, made Dec. 6, in which she made between 35 and 36 knots. The Tartar is a sister ship to the Mohawk, each being 270 ft. long and fitted with engines of 14,500 horsepower.

SUMMARY OF NAVAL CONSTRUCTION.

The monthly summary of naval construction, issued by the bureau of construction and repair, shows the following progress upon vessels:

Name of Vessel.	Building at—	—1909— Per Cent of Completion. Feb. 1.	Mar. 1.
BATTLESHIPS.			
South Carolina	Wm. Cramp & Sons	78.9	82.3
Michigan	New York S. B. Co.	89.7	93.0
Delaware	Newport News S. B. Co.	64.1	68.5
North Dakota	Fore River S. B. Co.	70.6	74.5
Florida	Navy Yard, New York	3.3	4.8
Utah	New York S. B. Co.	3.1	5.6
TORPEDO BOAT DESTROYERS.			
Smith	Wm. Cramp & Sons	65.2	67.8
Lamson	Wm. Cramp & Sons	63.8	66.3
Preston	New York S. B. Co.	59.3	60.2
Flusser	Bath Iron Works	55.3	60.6
Reid	Bath Iron Works	54.6	60.0
Paulding	Bath Iron Works	3.7	5.0
Drayton	Bath Iron Works	3.7	5.0
Roe	Newport News S. B. Co.	10.2	17.6
Terry	Newport News S. B. Co.	9.5	17.1
Perkins	Fore River S. B. Co.	6.7	11.7
Sterrett	Fore River S. B. Co.	6.7	11.7
McCall	New York S. B. Co.	5.8	8.2
Burrows	New York S. B. Co.	5.8	8.1
Warrington	Wm. Cramp & Sons	6.2	8.4
Mayrant	Wm. Cramp & Sons	6.5	8.1
SUBMARINE TORPEDO BOATS.			
Stingray	Fore River S. B. Co.	69.9	77.5
Tarpon	Fore River S. B. Co.	71.0	76.2
Bonita	Fore River S. B. Co.	68.4	71.5
Snapper	Fore River S. B. Co.	65.6	71.0
Narwhal	Fore River S. B. Co.	70.0	74.4
Grayling	Fore River S. B. Co.	64.7	70.7
Salmon	Fore River S. B. Co.	61.3	64.2
Seal, Lake Sub. T. B.	Newport News S. B. Co.	0.0	4.6
COLLIERS.			
Vestal	Navy Yard, New York	98.6	98.6
Prometheus	Navy Yard, Mare Island	98.5	98.5
TUG BOATS.			
Patapsco	Navy Yard, Portsmouth	97.0	98.5
Patuxent	Navy Yard, Norfolk	98.0	99.0

ADVERTISERS

The Star indicates alternate insertions, the Dagger once a month.

CLASSIFIED ADVERTISING SERVICE

U. S. ENGINEER OFFICE, WILMINGton, Del., March 12, 1909. U. S. steam yacht Adele (length 76 ft., draught 6½ ft., about 70 I. H. P. and 18 net tonnage) will be sold at public auction at noon April 12, 1909, on upper side at foot of Fairmount avenue, Philadelphia, Pa. Same can be seen there from April 5 to time of sale, and before then at Pusey & Jones Shipyard, Wilmington, Del. Terms, one-quarter cash at time of sale, and remainder within ten days thereafter, on delivery of boat. Quarter payment will be forfeited if remainder is not paid within the ten days, and boat will then be sold again. L. H. Rand, Capt., Engrs.

U. S. Engineer Office, 57 Park St., Grand Rapids, Mich., March 15, 1909. Sealed proposals for Repair of North Pier at Manistee, Mich., will be received here until 3 P. M., April 14, 1909, and then publicly opened. Information furnished on application. Charles Keller, Maj., Engrs.

U. S. Engineer Office, Buffalo, N. Y., March 15, 1909. Sealed proposals for constructing stone breakwater at Buffalo Harbor, N. Y., will be received at this office until 11 o'clock A. M., April 15, 1909, and then publicly opened. Information on application. W. L. Fisk, Colonel, Engineers.

PROPOSALS.—Sale of U. S. S. *Inca.*—Sealed proposals will be received at the Navy Department until noon of the 17th day of March, 1909, at which time and place they will be opened, for the purchase of the U. S. S. *Inca;* appraised value, $5,300. The vessel will be sold for cash to the person or persons or the corporation or corporations offering the highest price therefor. *Proposals must be submitted in a sealed envelope addressed to the Secretary of the Navy, Washington, D. C., endorsed "Proposals for the purchase of the U. S. S. Inca," and each proposal must be accompanied by a satisfactory certified check for not less than 10 per cent of the amount of the offer.* On application to the Navy Department forms of bids and bonds, together with the terms and conditions of sale, also a printed list giving general information concerning the vessel, will be furnished. The vessel can be examined at any time after the date hereof by applying to the Commandant of the Navy Yard, Boston, Mass. It must be removed from the limits of the navy yard within such reasonable time as may be fixed by the Department. The Department reserves the right to withdraw the vessel from sale and to reject any or all bids. TRUMAN H. NEWBERRY, *Secretary of the Navy.* 2-11-09

U. S. Engineer Office, Detroit, Mich., Feb. 27th, 1909. Sealed proposals for the construction of the superstructure of a movable dam for St. Marys Falls Canal, Sault Ste. Marie, Mich., will be received at this office until 3 P. M., March 30, 1909, and then publicly opened. Information on application. C. McD. Townsend, Lieut. Col., Engrs.

Sealed Proposals will be received at the office of the Light-House Engineer, Buffalo, N. Y., until 11 o'clock, A. M., March 30, 1909, and then opened, for furnishing materials and labor of all kinds necessary for the construction of a light-house and an iron beacon at the entrance to Cleveland Harbor, Ohio.

SECOND HAND DOUBLE FIRE box boilers for sale, out of steamer "Mohegan," 16 ft. long by 12 ft. diameter shell, two 13-in. flues and two 32-in. flues, allowed 120 pounds steam. United States inspection. A bargain. Address Graves, Elgwood & Co., Buffalo, N. Y.

PASSENGER STEAMER CHEQUAMEGON. Built in 1903. Allowed 400 passengers. Triple-expansion engines. 175 lb. steam pressure. 125 ft. over all. 22 ft. beam. Electric lights. Search light. Steam steering gear. Draught, 8 ft. 10 in. Rated A1. Information and price apply to C. A. Webb, Traverse City, Michigan.

FOR RENT. TUG AND TWO derrick barges, each 150 ft. long, 34 ft. beam, carrying capacity 650 to 750 tons on deck. For further particulars write, Coast & Interior Contracting Co., Fayetteville, N. Y.

TUG FOR SALE. TUG "J. J. Evans" for sale, in first-class condition, rebuilt November, 1907, hull of oak, 45 ft. keel length, 12 ft. beam, 6 ft. depth, 14 gross tons, high pressure Sutton engine, cylinder 14 x 14 in., firebox boiler, 5 x 9½ ft., 100 lbs. steam. Can be seen at Two Rivers, Wis. Address Bank of Two Rivers, Two Rivers, Wis.

TUGS FOR SALE. STEEL TUG, now building, 105 ft. long overall, 21 ft. beam, 12 ft. 3 in. depth of hold. Engine 15 x 30 x 22, Scotch boiler, 150 lbs. steam. Coal capacity 80 tons. Also a tug 67 ft. long, of oak, 16½ ft. beam, 7½ ft. depth of hold. Single engine, 14 x 16. Boiler 6½ ft. x 12 ft. for 130 lbs. steam pressure. Fresh water tanks forward and aft. Independent pumps. Keel Condenser. Also two small tugs, not new. Address McIntyre & Henderson, foot of Montgomery St., Baltimore, Md.

SCHOONER "LOTUS" FOR sale, in good condition, rates 85. Capacity, 540 tons coal, 375,000 ft. lumber, 9,000 ties. Address owner, J. P. Bates, 2424 S. Halsted St., Chicago, Ill.

SCHOONER "OAK LEAF" FOR sale, capable of carrying lumber, cedar post, gravel and coal. Her length is 100 ft., width 26 ft., light draft. For full particulars, address Mrs. D. Munro, Gibraltar, Mich.

SMALL STEAMER AND LARGE lighter for sale. Steamer has carrying capacity of 275 tons; speed 10 to 12 miles per hour; length 117 ft. over all; beam 24 ft.; depth 8 ft.; engine, 18 x 20; boilers in first-class condition. Steamer entirely rebuilt and newly outfitted by American Ship Building Co. one year ago. Has hoisting engine and derrick forward with lifting capacity 7 to 10 tons. Will make good sand sucker or could be used for contracting, dredging, etc. Lighter has carrying capacity of about 600 tons; length 127 ft.; beam 30 ft.; depth 7 ft. Is in first-class condition and fully equipped for wrecking and dredging operations. The equipment includes 1 derrick and deck engine with lifting capacity of 25 tons, 1 large clam shell, 1 100 H. P. boiler, 4 large anchors with cables and buoys, 1 complete diving outfit, 1 swinging engine, 1 dynamo engine and dynamo, etc. Must be sold to close the estate of Walter V. Metcalf, deceased. For full particulars address Toland & Pearson, Attorneys, 541 Society for Savings Bldg., Cleveland, O.

FOR SALE. ENGINE. U. S. Engineer Office, Vicksburg, Miss., Mar. 13, 1909. Sealed proposals for the purchase of a quadruple expansion, 125 horsepower condensing engine will be received here until 12 o'clock, noon, April 30, 1909. Information on application. Clarke S. Smith, Capt., Engrs.

TUG WANTED FOR SEASON 1909, power about 18 x 20 in. engine. Also wanted to buy steel tug hull about 85 x 20 ft, 10 ft. 6 in. deep. Address Standard Contracting Co., Wade building, Cleveland, O.

AN EXCELLENT CHANCE TO buy at a low figure an up-to-date slightly used triple-expansion marine engine with shaft. Surface condensor, air and circulating pumps, size 14-24-40 by 30 stroke. Also Scotch marine boiler built for it, 200 lbs. steam. Address B. F. Conway, 39 Cortlandt St., New York City.

WRITE US FOR ANY BOOK ON Mechanical Subjects. Book Department. The Penton Publishing Co., Cleveland.

STEAMER AND CONSORT FOR sale. We offer the Steamer "Niko" and Consort "Annie M. Peterson," lumber capacity of both, from 1,650 M. to 1,700 M. ft.; coal capacity, 1,150 and 1,300 tons. Boats now laid up in Chicago and open for inspection. Both are in good condition and are for sale for cash. For further information address J. A. Calbick Co., 2 Sherman St., Chicago, Ill.

McMYLER DERRICK FOR SALE, 3 tons capacity, 14 ft. gage. Located at Cleveland. Address Box 50, MARINE REVIEW, Cleveland, O.

HULL, ENGINE AND BOILER for sale, of steamer "Frontenac." Entire outfit will be sold at the price of the boiler alone. Boiler 12 x 12, allowed 150 lbs. steam. Can be seen at Lorain, O. Address, H. C. Burrell, Lorain, O., or C. E. Benham, Cleveland, Ohio.

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14-24-40 x 30 Triple Expansion Engine.
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Helm & Co., D. T., Duluth, Minn.
Hawgood & Co., W. A., Cleveland, O.
Holmes, Samuel, New York, N. Y.
Hutchinson & Co., Cleveland, O.
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Lake & Ocean Transportation Co., Detroit, Mich.
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Jenkins, Russell & Eichelberger, Cleveland, O.
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MacDonald, Ray G., Chicago, Ill.
Marshall, Alexander, Duluth, Minn.
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